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TREATISE

ON THE

BREEDING AND MANAGEMENT

OF

LIVE STOCK:

COMPRISING

CATTLE, ...	..... DEER,
SHEEP, ...	..... GOATS,
HORSES, ...	..... RABBITS,
ASSES, ...	..... POULTRY,
MULES, ...	..... BEES,
PIGS, ...	..... FISH,

&c. &c. &c.

IN WHICH THE

PRINCIPLES AND PROCEEDINGS

OF THE

New School of Breeders

ARE FULLY AND EXPERIMENTALLY DISCUSSED.

TO WHICH ARE ADDED

Directions for making Butter and Cheese, curing Hams, pickling Pork and Tongues, preserving Eggs, &c. &c.

WITH

AN APPENDIX,

CONTAINING

Tables of Prices in the Live and Dead Markets, some extraordinary Sales of Cattle and Sheep, and other Particulars.

THE WHOLE

Interspersed with various Information of Importance to Breeders, Graziers, Farmers, and the Public at large.

IN TWO VOLUMES.—VOL. I.

ELUCIDATED BY EIGHT COPPER-PLATES, AND SEVERAL ENGRAVINGS ON WOOD.

BY RICHARD PARKINSON,

Author of "The Experienced Farmer," "The English Farmer in Ireland," "A Tour in America," &c. &c.

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ERRATA.

Vol. I, page 66, line 2 from bottom, for '155*l.* 11*s.*' read '151*l.* 11*s.*'
..... 72, line 9 from bottom, for '92*l.* 1*s.* 6*d.*' read '93*l.* 9*s.* 6*d.*'
..... 83, line 11 from top, for '5*s.*' read '15*s.*'
..... 107, line 11 from bottom, read 'weighing from 280 lb. to 420 lb. EACH.'
..... 176, line 5 from bottom, for 'proper,' read 'improper.'
..... 247, line 3 from top, for 'Mr. Billingby,' read 'Mr. Billingsley.
..... 336, line 5 from top, for 'D' read '*lb.*'
..... 383, line 12 from top, for 'EACH sheep's carcases to weigh 300 lb.,' read 'THE sheep's, &c.'

NOTE.—In my observations on stall-feeding, where I have remarked that grass land will fatten more cattle and better eaten on the ground, than when mown, I mean, if it be convenient to allow each beast an acre or acre and half. But this rule cannot always be observed, as happened in my case when I kept cows.—Having but four acres of land for about twenty cows, and at times in the summer more, I inclosed about one rood of land, keeping the cows on that part, and mowing the other: had I suffered that number of cows to depasture on the four acres, they would, by treading, staling, and dunging on the land, have rendered the grass of scarcely any value; whereas, when the grass was mown, it afforded great profit.—This is a strong case against depasturing cattle, in the summer, first in one pasture and then in another; for when there are four or five cattle put on an acre, and changed about, a mode of proceeding highly recommended by some authors, they destroy more grass by trampling, &c. than they eat.

INTRODUCTION.

When an author presumes to controvert opinions almost generally received, more especially if those opinions are supported by men of rank and eminence, it seems necessary, in order that the public may be enabled to appreciate his claim to notice and attention, that he should fully state the grounds on which his ultimate conclusions have been founded. So, in the present instance, I consider myself required to shew by what means I have gained the information respecting LIVE STOCK contained in this work, and at the same time been led to differ so essentially in practice from the new school of breeders, graziers, and speculatists.

Having had repeated occasion to mention Mr. Bakewell, and, in several particulars, to disapprove of his proceedings, it might be thought that I wish to detract from his character as a breeder: on the contrary, I am free to admit that he possessed great merit, and was of infinite service to the country;—and this has ever been my opinion from the first hour I had the honour of being in his company. But although Mr. Bakewell was unquestionably a man of sterling abilities, his judgment was not *always* correct; instance his advice with respect to the formation of roads, which he contended would be better if made concave, than, as at present, convex—an idea, the inconsistency of which must be evident to every man of the least reflection. I therefore cannot help thinking, that Mr. Bakewell was occasionally led into error by a—I can scarcely say pardonable—vanity in his own powers; and a wish to strike out something new, more, perhaps, for the sake of novelty, and to

engage attention to himself, than for real use or the benefit of the community. Thus, in his choice of animals, he selected those that were uncommon, on which to make his experiments; hence it was with difficulty he could find a market for the produce, and he remained in indigent circumstances: but he at length accomplished his design; or, to use his own words, "he fought a hard battle, and won it."

It appears to me, Mr. Bakewell possessed more discernment or cunning than the generality of mankind; he saw that fashion frequently leads the judgment astray, in defiance of calculation and reason; and that what is expensive, or hard to be acquired, is valued in proportion. This consideration he acted upon in the production and sale of his breed of sheep, and the result completely answered his most sanguine expectations: otherwise, setting aside prejudice and fashion, the value of a sheep is easily determined; its whole produce being sold by weight, the largest must be the best. *Now*, Mr. Bakewell is censured by salesman, butcher, and the public, for introducing a breed of animals that produce much fat, with little lean, a due mixture of both being desired by consumers in general. But, whatever his object might be at the time, the result clearly proved the possibility, by proper crosses, of breeding any kind of animal with such properties as may be required; many instances of which are given in the course of this work. I would here only particularly notice the Irish sheep, with extremely large bones, producing a shoulder of mutton weighing 11½ lb, nearly all lean, not yielding, when roasted, one ounce of fat (his gross weight must have been at least 100 lb); while a neck, weighing 8 lb, from a small-boned new Leicester sheep, the carcase of which probably weighed about 100 lb, gave 3½ lb more fat than was wanted: hence, were those two breeds put together,

they would very likely produce the kind of meat desired by the consumer. Mr. Bakewell's great attention to the breeding and feeding of animals has certainly given rise to a spirit of experiment and investigation, which has been productive of much benefit to the country; and therefore, notwithstanding he may have misled individuals, the public thanks are due to him for his great spirit and industry in disseminating knowledge, and for enlightening and exciting emulation among breeders, graziers, &c.

Although brought up under the directions of a father who bred and fed much good stock of a profitable kind, and also pursued the most regular systems, Mr. Bakewell's ideas opened to me a very extensive field for improvement. My father's stock were principally intended for the London market, a distance of about 150 miles; it was consequently necessary they should be of the larger kind, and have attained considerable growth, before being driven from home. Of the cattle, though a mixed breed, the oxen were as large as Mr. Bakewell's, and more fattening; and, as we were in the habit of drawing oxen, they continued growing till the time they were sent to market, and readily made themselves fat at the age of four or five years: the cows gave more milk and butter—a recommendation of no small importance - and fattened, when required, at three and four years old. Our sheep were of a rather larger sort than Mr. Bakewell's, though they did not feed so well; but they afforded a greater quantity of wool, and that of a much better quality, which was of material consequence on those marshy lands in Lincolnshire, where we resided, the wool of the wethers being the chief profit for the last year or year and half: the ewes produced, during the time they were breeding and fattening, 4 lb a fleece, four times shorn, or 16 lb an ewe, more than could be

obtained from Mr. Bakewell's sheep. My father's horses were of the largest dray kind, superior in power, action, and form for use, with more bone and better feet; they were less upright in the fore end, and consequently did not draw so much by the throat.

Mr. Bakewell's great merit certainly lay in his sheep, an alteration being much wanted in the breed at that period, particularly in the county of Lincoln, as many flocks were much too coarse, both in wool and carcase, to be the most profitable stock. Had the breeders of those large-boned, coarse, hairy-wooled sheep, taken one cross, and then returned to their own kind, they would have acted for general benefit; but by a thoughtless perseverance in producing small bones, with little wool, most of the flocks on rich natural soils have been injured. This fashionable mania had, at one period, arisen to such a height, that rams were often hired at greater prices than the offspring would pay. But there are certainly, even at this time, many convertible soils on which the best kind of the Dishley breed are the most profitable of long-wooled sheep, more especially where they are near a market, particularly the lambs, which are never too fat. Since Mr. Bakewell produced his cross, which is admitted to have been of some service, the breed has passed into the possession of persons who are incompetent judges of the qualities required; therefore it would be unjust to accuse him of having spoiled all the flocks injured by the cross: as Mr. Bakewell once improved the breed of sheep, if he had been living it is but fair to suppose he might have corrected his errors, and fully accomplished the object he had in view. The anecdote of the quaker may be aptly applied to Mr. Bakewell's successors:—When asked in court, by the opposing counsel, if he knew the difference between 'plaintiff' and 'defendant,' he replied in the affirmative;

and mentioning the name of an eminent counsellor, who he said was a great lawyer, "Thou art a lawyer also," said he to his interrogator, "but not *like*...*wise*." So, the flock of Mr. Bakewell was left in the hands of a ram-breeder also, but not like...wise: and hence the Dishley sheep have been changed much for the worse since the time when I first saw them.

It will be seen in the course of this work, I have tried many experiments, in different parts of the globe, by which I always found the largest animals the best, and generally the first fat in the same pasture. Mr. Bakewell had formed an idea that they eat more food than smaller animals of the same kind, which seems a very reasonable supposition; but, from my own practice, I am perfectly convinced that it is erroneous: and, independent of my trials, the most positive proof is afforded by the London cow-keepers, who feed their cows by measure in grains, and by weight in hay, allowing all the same quantity, either large or small, never perceiving that one requires more than another, even of different breeds.

Mr. Bakewell was also much mistaken in regard to offal; supposing that food given to animals was appropriated to distinct purposes; that, for instance, a long-wooled sheep, on account of its wool, consumed a greater quantity than a sheep with short-wool: and some authors have even had the assurance to support a similar opinion in print. To determine as to the truth or fallacy of this idea, I have had recourse to many experiments.—I kept two dogs confined, one a large Newfoundland, with long hair; the other a very delicate greyhound, with much longer legs than the Newfoundland dog, a remarkably smooth coat, and a smaller mouth; I therefore expected this latter would consume less food, but, on the contrary, he ate more, by somewhat above 1 lb of horse-flesh daily. Again, in regard to horns, it may

be seen that my small cow without, ate as much as larger cows with horns; and the cow-keepers in London have a mixture of cows with and without horns, between which no difference is perceptible in the consumption of food: so, also, a horse with a long tail eats no more than he does if his tail be cut off. I have likewise made enquiries of men who have lost a limb or limbs—an arm, a leg, or both legs—as to what effect the deprivation had on their appetites; and they all assured me that they were not sensible of any alteration: thus it seems the stomach requires the same support if a man's legs or arms are cut off, as it did before the amputation.

With respect to the new Leicester sheep eating less than those of a coarser make and larger frame, it appears from the trial made with the Irish sheep and the new Leicester (hereinafter recorded), that there is little difference. I know a very correct observer, and a man of veracity, in Somersetshire, who formerly kept some of the large polled county sheep, which he crossed with new Leicester rams; and he says, when he had got them nearly the full breed, he could not keep the same number he before had of the old kind on an equal space of land: however, I do not think they eat more, though I believe they consume as much. Mr. Bakewell kept but a small number of sheep, considering the size of his farm: nor is there an example given by any of the new Leicester ram-breeders of their sheep bearing hardships, or a greater proportional number being maintained on a given extent of pasture; indeed, their rams generally have as much feed of the very best to choose from, as would fatten an ox. When I was at Mr. Coke's at Holkham, during the time he kept two flocks, the one new Leicesters, the other South Downs, I observed to Mr. Wright, the bailiff, that the former were much fatter than the latter; he replied, 'and so they ought, as they fed in the

parlour and had the first cuts, while the South Downs lived on the licking of the plates.' I saw also, at that time, a new Leicester wether and a South Down keeping by way of experiment to the age of three years, to ascertain or try their proof: an account was afterwards published in the papers, by which it appeared there was a very small difference in weight of carcase, and the South Down the greater proof.

To return to offal.....There are some things to which the term 'offal' seems very improperly applied.—The horns of a beast, although the breeder or the grazier may not always sell the ox or cow to more advantage for their being large, are at least an ornament; but, independent of that, the manufacture of them forms a very great trade in this country: in one cutler's shop, in London, I was shewn thirty-five different articles partly made with horn. Thus, although the horns of cattle are sold at three guineas a hundred, of six score, there is frequently one pair the two first cuts of which, about three inches long, when manufactured, are worth 7*s.* made into drinking horns, sold at 3*s.* 6*d.* each; and the whole of the horns will produce in value above one guinea: a pair of handsome mottled horns returns much more, the greater part being applied to the fabrication of pen-knife hafts, &c. But, as it plainly appears the horns cost the breeder nothing, whatever he sells them for is clear gain, and the nation at large is much benefited by the business they create; therefore those writers who have decried horns, and recommended the breeding of all cattle without, prove themselves mere theorists; at the same time they are likely to mislead the breeders by their erroneous conclusions, and thereby to occasion an evil that might prove serious to the trade of this country.

Again, the entrails of cattle are generally termed offal, which is not the fact, as the first two stomachs of a large

ox are worth 15*s.* before being made into tripe (besides the fat preserved in the boiling), which is sold at 8*d.* a pound, and said to produce one guinea or more. The small intestines, or garbage, are vended for cats'-meat; the feet sell for from 1*s.* to 15*d.* or 18*d.* each; the liver, lights, and melt, weighing on an average from 25 to 28lb, are sold at about 3*d.* per pound: even the blood, in London, is used for several purposes, and many hogs are fattened upon it. Thus, to the dealer there is scarcely any loss; and to the consumer no real waste but bone: on this subject I have tried many experiments, which follow; first observing, that the above remarks and calculations apply to what are called 'offals' of the largest cattle; those of the smaller kinds diminish according to their size and value.

BEEF.—*The quantity of bone in each separate weigh, coarse and fine, affording an idea of the proportion a beast contains in his whole carcase.*

	Flesh and bone together in the raw state.	Bone in each weigh.	Proportion of bone in each pound.
Loin of Mr. Chandler's prize ox, being at Hereford, shewn in December, 1808; 5 inches thick on the rib	*lb.* 8 8	*oz.* 11½	*oz.* 1¼
Loin of a moderately fat beast	10 0	20	2
Aitchbone	9 11	21	2¼
Buttock	20 0	20	1
Thin part of ribs	5 4	7	1¼
Sticking	13 0	34	2⅝
Shin	4 13½	23½	4⅛
Shank, or leg	5 2	25	5
Calf-head	8 10	36	4¼
Tail of a beast	1 9	5	3⅜

N. B. Much having been said respecting the waste of such fat meat as that of the prize ox, I weighed the separate parts after roasting :—

	lb.	oz.
Weight in the raw state	8	8
Weight when roasted	6	11
Dripping	1	9
Waste	0	4
Total . .	8	8

From this experiment it appears that the idea of waste in such meat is without foundation; as the dripping, which is even better than butter that cannot be bought at less than 14*d.* per pound, is good to fry fish, make pie-crust, &c.

I cut the bones out of a sticking of beef in the raw state, weighing 18 lb: they weighed 4 lb, or 54 oz., which is at the rate of 3 oz. of bone to 1 lb of meat. I also cut off the flesh from two ribs of the chine in the raw state; gross weight 13¾ lb; the bone weighed 36 oz., which is about 2½ oz. of bone to 1 lb of meat. These two experiments giving a near proportion with the parts cooked, shew that the little loss sustained in the weight of meat from the raw state in the cooking is in the bone, which when boiled goes into the broth, or when roasted is in the gravy. I have ascertained, from various experiments, that about one eighth part of a moderately fed beast, weighing from 500 to 700 lb, is bone; and that the loin has a regular proportion in it, by which the weight in the whole carcase may be determined: the bone in a high-fed ox of 200 st. 1 lb, or 1,601 lb, which was the weight of the prize ox, is estimated at about one fourteenth of the entire carcase.—The loin of beef,

when divided into three separate portions, contains an equality of bone to meat in each part.

MUTTON.

It being the pride of the new Leicester breeders to exclaim against offal of every sort, and to fancy that they produce sheep with less offal than any other breed, I have been induced to try the weight of bone in different joints of several kinds of sheep, particularly the heads and necks, called by the butcher *scrags*, being the parts for which they boast themselves the most famous. The salesmen and butchers unanimously consider a small scrag as the worst fault a sheep can possess, the animal, they say, being sure to come light to the scale, and to be deficient in almost every part. When I was in Ireland, the same opinion prevailed among the butchers in Dublin. At that time I thought it was merely prejudice; but by attending the Smithfield markets, and becoming acquainted with many very intelligent butchers who both graze and kill numbers of sheep of various breeds, I have found it to be the general sentiment: this determined me to investigate the matter. The heads are not sold by weight, but commonly at about 9*d.* each, great or small; but I have examined how much the consumer loses even in that article. The following is the proportion of bone, or offal, in the several parts, beginning with the heads.—

Heads.

COUNTIES.	Gross weight.		Bone in each.	Proportion in each pound.
	lb.	*oz.*	*oz.*	*oz.*
Gloucester	7	0	36	5
Warwick	5	0	31	6
Leicester	4	0	26	6½
Ditto, very fine . .	3	0	21½	7

Scrags.

COUNTIES.	Gross weight.		Bone in each.	Proportion in each pound.
	lb.	oz.	oz.	oz.
Warwick	3	2	5½	1⅝
Lincoln	2	12	5	2
Ditto	2	4	5½	2½
South Down . . .	2	6	6½	2⅝
Leicester	1	5	5	4⅝
Ditto	1	14	6½	3½
Ditto	1	9	6½	4
Ditto	1	6	4½	3⅝
Ditto, very fine . .	1	4	5½	5

Joints.

Leg, Kent	27	0	16½	0⅝
Ditto, Warwick . .	14	8	15½	1
Shoulder, Leicester .	8	8	17½	2
Neck, ditto	3	2	5	1⅜
Ditto, ditto . . .	4	12	7⅜	1⅝
Ditto, ditto . . .	5	2	7½	1⅛
Neck, Lincoln . . .	4	4	9	2
Ditto, ditto	4	12	8½	1⅜
Shoulder, South Down	5	12	10½	1⅜

It will be observed, there was in the Gloucester 5 oz.—in the Warwick, half Leicester, 6 oz.—in the new Leicester 6½ oz.—and in the full-blood, very fine, 7 oz.—of bone to 1 lb of meat.

The scrags were all cut alike from the neck, over the first rib. The Warwick scrag contained 1⅜ oz.—the Lincoln 5 oz.—the South Down 2⅜ oz.—the average of five Leicester 4 oz.—and the very fine one 5 oz.—of bone to 1 lb of flesh.

The Kent sheep was of Mr. Wall's breed, one year

old; weight of carcase 158 lb: the leg cut off haunch fashion. The Warwick carcase weighed 112 lb. The shoulder, a Leicester carcase, weight 80 lb: this sheep died straw-coloured or yellow. I was induced to purchase the joint from having heard contradictory opinions respecting the flavour, &c.; but could perceive no difference from other mutton of a proper colour: it has been also said that the colour is not to be discovered by candle-light, which is erroneous. I was highly disappointed in this shoulder of new Leicester mutton, as I expected the bone to be lighter in proportion than that of the Welsh sheep and many others; as the Leicester sheep appear heavy in their fore-quarters, and the smallness of the bone in the leg denotes small bones in other parts: but it may be seen there was nearly 2 oz. of bone to 1 lb of meat, while in the Welsh ewe there was barely 1¾ oz.: —the Leicester was a handsome carcase, and properly fat. To be as correct as possible, each bone was weighed separately, the result being as follows:

	oz.
Blade-bone	4
Marrow-bone	8
Shank	4
Ditto end	1½
Total .	17½

In the above there is 1½ oz. waste by the butcher leaving the shank on below the knee, a practice not in use in some parts of the kingdom.

The first three necks were all Leicesters, and averaged about 1¾ oz. of bone to 1 lb of meat: the last two necks were Lincolns, of a very middling breed, the weight of each carcase being but about 80 lb; of these the scrags were cut off, before which the necks, altogether, weighed

7 lb each; the scrags averaged nearly 2 oz. of bone to 1 lb of meat, and the necks the same. Thus, from this experiment, it appears that sheep of a common form have as much flesh on the scrag as on the best end of the neck: but the new Leicesters averaged 4 oz. of bone to 1 lb of meat on their scrags, and 2 oz. on the prime part of the neck; it therefore seems they have very nearly as much bone in their prime joints as other sheep, and more in the inferior for want of flesh.

The following experiment shews the weight of flesh and bone in half the carcase of a very fat Welsh ewe: weight when sent from the butcher 16 lb; lost by hanging 3 oz.; every joint being weighed when put down to roast.

	Gross weight.		Bone in each.	Proportion in each pound.
	lb.	oz.	oz.	oz.
Neck	2	10	6	2¼
Breast	2	0	2	1
Shoulder	2	15½	5½	1¾
Loin	2	4	4	1¾
Leg	3	6	5	1½
Scrag	0	11	3½	5
Kidney fat	1	8		
Kidney	0	2		
Hind foot and shank	0	3½	3½	
Fore shank	0	1	1	
	15	13	30	
Waste	0	3		
Total	16	0		
Head	2	7½	15½	6¾

As the above calculation was made on half the carcase,

the whole sheep would amount to 64 lb, and the bone to 30 oz., being a little less than 2 oz. of bone to 1 lb of meat. This was the fattest Welsh carcase I ever saw; notwithstanding which, it contained as great a proportion of bone as the Warwick sheep. It has been a general opinion, that small animals have a less proportion of bone than large ones; but it seems they are nearly the same, when made equally fat; for it may be seen in the different comparisons I have exhibited, that the scrags of small sheep have more bone in proportion than the large: the Welsh ewe had 5 oz. of bone to 1 lb of meat, while the Warwick sheep had only 1¾ oz., which shews that the former had the most offal; and in the leg the ewe had 1½ oz., the Warwick leg only 1 oz., of bone to 1 lb of meat. Thus it appears the consumer has less waste from large animals than from those of a small size.

In endeavouring to form a just conclusion as to the proportion of offal, or waste, in the carcases of different breeds of sheep, I can only judge by comparison, not having it in my power to go through the whole; but I have ascertained the quantity of bone in a Welsh sheep's carcase, and in the coarsest and finest parts of the Warwick: hence, on comparing the joints, there appears to be full 1¾ oz. of bone in the Welsh ewe, as there is more shank left on the leg than usual with large sheep, while there is but 1¼ oz of bone in the Warwick sheep, to 1 lb of flesh.—The reader will observe, I call nothing 'offal' to the butcher but what he does not sell, or to the consumer but what he buys and does not eat.

Having thus elucidated the subject of *offal* in beef and mutton, I will give the results of experiments made on

hares, rabbits, and poultry, which I have found, in a general way, to contain the same proportion of bone to flesh as an ox or a sheep.—

Hares.

	lb.	oz.
Gross weight	7	6

	lb.	oz.		
Carcase	5	9		
Skin	0	9		
Entrails	1	0½		
Feet	0	3½		
	7	6		

COUNTIES.	Weight of carcase. lb.	oz.	Weight of bone. oz.	Proportion per pound. oz.
Lincoln	5	9	9⅝	1¾
Ditto	5	13½	9½	1¾
Dorset	5	1	8⅝	1¾
Ditto	4	12	8	1¾
Ditto	5	5	8	1½

Rabbits.

Norfolk	1	7	1⅝	
Ditto	1	6	1½	
Ditto	1	9½	1½	
Ditto	1	11½	1¾	
Lincoln	2	11	4	1¾
Ditto	2	9	4	1¾
Ditto	2	14	5	1¾
Ditto	2	7	4½	1¾

Geese.

Weight of carcase. lb.	oz.	Weight of bone. oz.	Proportion per pound, oz.
8	12	15	1¾
7	12	12	1¾

Weight of carcase.		Weight of bone.	Proportion per pound.
lb.	*oz.*	*oz.*	*oz.*
6	10	8½	1½
7	1	12½	1¾
6	10	10	1⅝
5	8	7	1½
		Ducks.	
2	10	4¾	1¾
2	1	4½	1¾
1	14	4	1¾
1	11	4	2
1	15½	4	2
1	14½	4	2
		Fowls.	
1	4	3½	3½
1	4	2½	2½
3	0	7	2⅓
		Turkeys.	
7	5	16	2¼
12	4	19	1⅔

Among the various experiments recorded in this work some may appear but trifling to superficial observers; but from the most insignificant I have derived information. I would instance the two cocks (see p. 352, vol. II), the Poland and the Bantam, which consumed the very same quantity of food, being allowed as much barley as they would eat; they were kept in an open yard or court, the former three months, the latter nine months, which was sufficient time to try the experiment: when killed, the Bantam weighed 1 lb 4 oz., with 4 oz. of bone; and the large cock 8 oz. more than double the other's weight in flesh, with just double the

quantity of bone. From this trial, and other experiments given in the following treatise, I have good reason to conclude, that Mr. Plascot's new Leicester sheep, one year old, weighing 80 lb a carcase, had consumed as much food, and would have at least one fourth more offal than Mr. Wall's sheep (the latter being fed on grass only, and the former on turnips), the largest of which weighed 164 lb the carcase.

There seems no doubt that animals in general have naturally a regular proportion of flesh to bone, for there is little comparative difference between the bones of hares, rabbits, fowls, &c. and those of sheep and cattle. I therefore infer, that animals may be bred with small bones to have much fat, but not the flesh they ought to have for the consumer. At the Smithfield show in 1808, there were two oxen exhibited which formed a sort of contrast to each other:—one was a Yorkshire ox, with more bone and of larger size; he died an extraordinarily good piece of beef, of fine colour, and properly mixed with lean of excellent quality: the other was a Hereford, with much smaller bones and finer features; he died a mass of fat, being five inches thick on the rib, with scarcely any lean, and very little on the loin, chine, or either of the best parts. Thus, it appears plain to me, in breeding the most useful animals, that a due proportion of bone to the flesh is required; the extreme of either small or large bones seems improper. In looking back to my own experience and observation, that very large-boned animals are frequently all lean, I remember an instance of a shoulder of mutton, weighing 11½ lb, being brought to the table at Dublin, about which, when roasted, there was not an ounce of fat: this sheep was of the true Irish breed, of a larger and leaner kind than I ever saw in England:—one cross of the Dishley to such sheep would unquestionably produce a great improvement.

In regard to weight of bone in the same joints of mutton, I have been much staggered. When the new Leicester was decidedly my favourite, I have privately tried the weight of bone in a sheep of that breed and in a large Lincolnshire sheep. The bone in the former, to the eye, appeared considerably less than the other; but on weighing them I found only a trifling difference, so small as not to be worth notice. Since I have made a practice of weighing all the bones of the meat I consume in my house, I have discovered that those of extremely fat meat are much heavier in proportion to their size than the bones of meat of moderate fatness: hence the saying, that 'fat meat weighs like lead.' The reason is obvious;—the bones of very fat meat are impregnated with considerably more fat than those of lean meat. In elucidating this subject, I put the bones into the fire; when those from the fat meat blazed like a lump of fat, while the others scarcely produced any flame. It may be seen, even in the scrags of mutton, that those of the new Leicester sheep weigh heavy: the bone in the Welsh ewe scrag, which was fat, also weighed very heavy. This observation led me to discover, that (independently of the great waste in cooking meat saturated with fat) the consumer pays more for what he does not eat in buying joints of extremely fat meat, even when the fat is pared off agreeable to his palate, than if he purchase such meat as is by nature properly composed of an intermixture of fat and lean.

Where bones are made use of as manure, those offat meat are much superior, and cheaper, as the purchaser buys them by measure, not by weight. The bones of a horse, supposed to be three bushels, used to be sold, in Yorkshire, at 1*s.* 6*d.*; consequently those of a large ox would be worth about 2*s.* I formerly thought that all the fat must be extracted from the bones of boiled meat,

which is not the fact; as I have boiled a bone three times, for two hours each time, to try to reduce its weight, but little difference was perceptible; it would still blaze when put into the fire. But a bone exposed to the sun, in the summer, for three or four days, when put into the fire, would not blaze, the fat being all exhaled: therefore those who preserve bones for manure ought to keep them in some place under cover; and when laid on land they should be immediately ploughed in, or if on sward, put on in winter, when there is little sun, otherwise their best qualities will be evaporated.

Having thus, I think, fully expatiated on the subject of offal, it may be proper to say a few words respecting the crosses which will be found recommended in this work, and of which many breeders, at first sight, may disapprove. I was at one period as much against them as any man, but time and experience have taught me to the contrary. I have always endeavoured, when speaking of crosses, to lay down systems for the regulation of them, an observance of which would, I am persuaded, be ultimately attended with great benefit to the country. I will, in this place, give one or two extraordinary crosses that have been tried, with a favourable result. The first I shall notice is in the pedigree of the celebrated racer Samson, bred by Mr. Robinson, which won five royal plates at six years old, and was sire of Engineer, Bay-Malton, Solon, Pilgrim, Tom-Tinker, Bishop, and King-Priam, all horses that could run well.—Samson was got by Blaze; Blaze by the Flying Childers; Childers by Darley's Arabian, his dam by Hip, grandam by Spark, son of Honeycomb-Punch, great grandam by Snake, great great grandam by a cart-horse that covered mares at 2*s.* 6*d.* a mare, great great great grandam was Lord D'Arcy's Queen. This information is given by a well-known trainer, the oldest now living; and, although the cart-

horse is not mentioned in the Racing Calendar or Stud-books, he asserts it to be a true pedigree: it is certainly a most interesting and rare circumstance in favour of crosses. This trainer further says, that Samson won seven royal plates, and was never beat but once, when he was blind and ill-rode, or he would have won that race also: the horse that beat him was Grenadier, got by Blaze, and belonged to Mr. Whitty, of Malton; consequently, being brother to Samson by the sire, of the same blood. Samson likewise got many good racers, and among them Bay-Malton, that run against the best horses in England at that time, and never was beat: which shews he was not a chance horse, but that he gained power by the cross of the cart-horse. While I lived in Yorkshire, I heard this cross very frequently mentioned; and having a very high opinion of crosses in animals, I have been at much trouble to investigate the utility of the proceeding, and the information hence acquired has induced me strongly to recommend it in this treatise. It is a well-known fact, that Lord Orford improved his greyhounds by a cross with the bulldog; but the progress was not so rapid, as he was seven crosses before he got the greyhounds to run to perfection again, and the race-horse required only three. From this cross, and some other results I could mention, I am clearly of opinion that the dray-horse might be brought to very high perfection by one cross of the race-horse: if a second cross had been taken with the cart-horse, the breed would have been entirely spoiled for racing. The breeder must, therefore, be careful not to go too far in whatever he may wish to improve the breed of his animals. In cattle, it may be remembered, the heifer shewn as a sight at Smithfield, of a mixed breed, was so nearly perfect, that there was not a critic could find a fault in her. Mr. Pell's ox, also of a mixed breed, shewn

in the year 1807, was allowed to excel every other ox exhibited of the best old-established or improved breeds —Hereford, Devon, Sussex, &c. In regard to sheep, it may be seen in this work what a most excellent breed Mr. James Clothier raised by a mixed breed: in hogs, my hogs at Slane; &c. &c.

Since it is fairly decided, by well-authenticated facts, that the race-horse has been improved by a cross of the cart-horse, and the greyhound by the bulldog, there does not a doubt remain in my mind but all other animals might also be improved by a judicious cross. Those two species of animals both wanted power, which the race-horse obtained from the cart-horse, and the greyhound from the bulldog. In the crosses that have been unsuccessfully taken, the failure has arisen from want of judgment; as, for instance, where great benefit has been obtained by one cross, a second at times has greatly injured the breed. Thus, in the crosses that have been taken by breeders in cattle, sheep, &c. the breeder seeing a great improvement from his first trial, has persevered in a second, third, and so on; whereas, he ought to have returned to the sort with which he began: if his object were fat, and he had taken the cross from a small animal with that perfection, but possessing many other very objectionable qualities, such as light weight to the scale, short of wool, &c. by holding to that unprofitable kind, the breed would continue getting worse and worse.

I will now give a few suggestions of what ought to be done with one or two of the best sort of animals which I think are the most difficult to improve. The Hertfordshire sheep, which is the most profitable horned wether this island produces,* as he thrives better on poor land

* There are many instances of the Hertfordshire horned crocks being sold, in small lots, for seven or eight guineas each sheep.—Mr. Chapman, of Wickham-Thorp, sold, in the winter of 1807, 217 of this breed for 1117*l.* which is 5*l.* 2*s.* 11*d.* each.

and short pasture, and will bear harder usage, than any sheep of his weight, selling also for the highest price of any sheep that come to Smithfield, sold fairly as butcher's sheep in large lots, and all other horned sheep being smaller, the improvement is consequently more difficult. I have an utter objection to take the horns from a sheep, as I think all horned sheep more hardy than polled ones; and the horns are a protection to them, particularly where they have part of their food to pick out of thorns, briars, &c. by preserving the head and wool: therefore, wherever horned sheep have been found in a county, I would recommend a preservation of them. But although the Hertfordshire sheep have some perfections, such as having length of carcase, bearing folding, and being able to travel great distances for their food, they do not possess the best form; consequently the object to be obtained is, to find a cross that will give a better form, and interfere the least with their present perfections. The Durham sheep are the most likely to effect this purpose, as they are of a much better make, and equally large or larger: but then they are not horned, and the wool is rather longer, and not of so good a quality; hence there would be some inconvenience in the wool. From the first cross, the Durham sheep being polled, the lambs would be without horns; but if the Hertford horned ram were put to the offspring, every lamb would have horns: and after once or twice putting the Hertford short fine wooled ram to the stock from the cross of the Durham sheep, there would be no visible difference in the fleece. But notwithstanding those sheep are found to be very hardy in their own county, it may be seen in this work they did not prove so in the county of Lincoln: nevertheless a cross from a Durham ram answered well on my poor land at Asgarby; and, although much larger than the new Leicesters, the offspring of both sorts pasturing

together, the Durhams succeeded the best. Mr. Bushright also purchased some large ewes from Durham, took them to Stalingborough, and put them on rich clay land, but they dwindled away greatly: and I knew an instance of a number of fine Northumberland ewes being brought into the county of Lincoln, which throve very ill. However, there is a material difference between taking a cross and changing the whole stock of a county; as the offspring, during the time they are sucking, become used to the herbage, the climate, &c. and are prepared for their future well-doing.

There is another animal I would notice, namely, the Berkshire hog, which I consider the most perfect of any of the kind I have described, as he would seem to want nothing. But the Cheshire hog being larger, which in itself is not so good an animal as the Berkshire, though the sow is more prolific and a better nurse (a point in which many of the Berkshire sows are deficient), one cross might be safely taken even to the advantage of the Berkshire breed, and very much to the improvement of the Cheshire; as a Berkshire boar would give his shape, and the Cheshire sow would add other requisites. In regard to hogs, I think they cannot be too large, if their form be good, as they are generally sty-fed: and it may be seen, by my own experiments, that there was no great inequality in fattening between the best Chinese and the best Berkshire, even at grass; and large and small are all fed, in a general way, on corn at last. A much longer time certainly will be required by the large hog to be completely fat; but he will always pay the best for the food he consumes. As a large hog does not suit every family, it is only putting him to fatten at a more early period; and he will at all ages be found to have a

greater proportion of lean, of an agreeable kind, than the small one. The best pork that is brought into the London markets is the Berkshire, generally at from sixteen to twenty weeks old: a Chinese hog, to attain the same weight, would require at least twelve months, and then be a mass of fat. Hogs are not like sheep and cattle; the best and most profitable may be safely moved to any county, and will constantly preserve their superiority: even in the climate of America, the Berkshire were found to thrive much better than the best Chinese.

It will be readily allowed there is not a more stupid animal in the brute creation, taking him in his natural uncultivated state, than the hog. To shew what may be effected by temperance and good feeding, not only as conducive to the fattening of domestic animals, which I have enforced in the following sheets, but in bringing into action their latent sagacity, I may instance the learned pig, and the shooting pig recorded in Mr. Daniel's "Rural Sports," the account of which, by Mr. D.'s permission, I will here insert.

SLUT.

"Of this most extraordinary animal, will here be stated a short history, to the veracity of which there are hundreds of living witnesses.—Slut was bred in and was of that sort which maintain themselves in the New Forest without regular feeding, except when they have young, and then but for a few weeks, and was given, when about three months old, to be a breeding sow, by Mr. Thomas to Mr. Richard Tooner, both at that time keepers in the forest. From having no young, she was not fed, or

taken very little notice of, until about eighteen months old; was seldom observed near the lodge, but chanced to be seen one day when Mr. Edward Toomer was there. The brothers were concerned together in breaking pointers and setters, some of their own breeding, and others which were sent to be broke by different gentlemen: of the latter, although they would stand and back, many were so indifferent, that they would neither hunt nor express any satisfaction when birds were killed and put before them. The slackness in these dogs first suggested the idea, that by the same method any other animal might be made to stand and do as well as one of those huntless and inactive pointers. At this instant the sow passed by, and was remarked as being handsome: R. Toomer threw her a piece or two of oatmeal roll, for which she appeared grateful, and approached very near; from that time they were determined to make a sporting pig of her. The first step was to give her a name, and that of Slut (given in consequence of soiling herself in a bog) she acknowledged in the course of a day, and never afterwards forgot. Within a fortnight she would find and point partridges or rabbits, and her training was much forwarded by the abundance of both which were near the lodge; she daily improved, and in a few weeks would retrieve birds that had run as well as the best pointer, nay, her nose was superior to any pointer they ever possessed, and no two men in England had better. They hunted her principally on the moors and heaths. Slut has stood partridges, black game, pheasants, snipes, and rabbits, in the same day; but was never known to point a hare. She was seldom taken by choice more than a mile or two from the lodge, but has frequently joined them when out with their pointers, and continued with them several hours. She has sometimes stood a jack-snipe, when all the pointers had passed by

it: she would back the dogs when they pointed, but the dogs refused to back her until spoken to; their dogs being all trained to make a general halt when the word was given, whether any dog pointed or not, so that she has been frequently standing in the midst of a field of pointers. In consequence of the dogs not liking to hunt when she was with them (for they dropped their sterns, and shewed symptoms of jealousy), she did not very often accompany them, except for the novelty, or when she accidentally joined them in the forest. Her pace was mostly a trot, was seldom known to gallop, except when called to go out shooting; she would then come home off the forest at full stretch (for she was never shut up but to prevent her being out of the sound of the call or whistle when a party of gentlemen had appointed to see her out the next day, and which call she obeyed as readily as a dog), and be as much elated as a dog upon being shewn the gun. She always expressed great pleasure when game either dead or alive was placed before her. She has frequently stood a single partridge at forty yards distance, her nose in a direct line to the bird: after standing some considerable time, she would drop like a setter, still keeping her nose in an exact line, and would continue in that position until the game moved; if it took wing, she would come up to the place, and put her nose down two or three times; but if a bird ran off, she would get up and go to the place, and draw slowly after it; and when the bird stopped, she would stand as before. The two Mr. Toomers lived about seven miles apart, at Rhinefield and Broomey lodges. Slut has many times gone by herself from one lodge to the other, as if to court the being taken out shooting. She was about five years old when her master died; and at the auction of his pointers, &c. was included in the sale, and bought in at ten guineas.

Sir H. Mildmay having expressed a wish to have her, she was sent to Dogmersfield park, where she remained some years: she was last in the possession of Colonel Sikes, and she was then ten years old, had become fat and slothful, but would point game as well as before. When killed she was at Bassilden-house. Slut weighed 700 lb. Her death, to those who possess common feelings of humanity, appears (if one may use the expression) at least animal murder: it would have cost but a trifling sum to have fed and sheltered her in the winter, and the park would have supplied her wants during summer at no expense."

This pig seems to have possessed extraordinary qualifications; as, from the account given, she cost very little for keep as a store pig, and not much to fatten, though she attained to so prodigious a weight. It would probably, therefore, be for the interest of breeders, to enquire after the breed, as they appear to be a kind of pig that seeks its food in the forest, and produces much profit with little expense or trouble.

DIRECTIONS FOR PLACING THE PLATES.

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THE DRAY-HORSE . . . . . 114 - - II.
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DESCRIPTION

OF THE

PLATES.

THE FATTENING COW.

This cow was not taken from life, but is from the author's own ideas, being the proper shape for all fattening cattle, of whatever kind.—It has been usual to give a figure of the bull in books on the subject of Live Stock; but the true form of a bull is no criterion to judge by, as his make is naturally coarser in many parts than either oxen or cows ought to be: the ox should be a little coarser than this plate, but vary very little in other respects, excepting that all his limbs should be proportionably larger.

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THE MILCH COW.

This cow is also from the author's own invention, and varies so much from the fattening cow, as to render a distinct representation necessary. I think it worth observation, that cows formed like the fattening cow will seldom be found profitable for milk; but there are some instances of cows of a form similar to the milch cow proving of value to the grazier: however, not being coarse in her shape, but light of flesh, like all other small-boned light-fleshed animals, her increase must chiefly consist of fat.—The form of this cow will afford a sufficient criterion for cows of every sort to fill the pail.

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THE SHEEP.

This sheep, called a Gloucester, represents a long-wooled wether. He may be said to be of a mixed breed, being taken

from three sheep, a Lincoln, a Leicester, and a Gloucester, uniting the best properties in each kind to form a perfect carcase: —the length of the head from the Lincoln; the smartness from the Leicester; the scrag, the breast, and all the lower parts, from the Gloucester: the top part, viz. from the scrag to the huck, in width, from the Leicester; the length, from head to tail, from either or both Lincoln and Gloucester, being similar; the rump and all the hinder quarters from the Gloucester; the length of the knee, and from the cameril to the ground, from the same, this breed being shorter in that part than any sheep of their weight. A Gloucester wether sheep, weighing 36 lb a quarter, measured from the knuckle to the knee 4¾ inches; while a lamb, a cross of the Merino ram put to a Ryeland ewe, weighing only 6½ lb a quarter, measured 5¼ inches.—My reason for explaining this sheep's form is from an opinion that, by due attention, and judgment in crossing, all the good properties of sheep are to be united in one animal; and that all sheep's carcases, of whatever size, either with short or long wool, horns or no horns, ought to be of that make: consequently it is unnecessary to give any other plate of the form of a sheep. The length of the face is noticed by artists in forming perfect symmetry; and therefore, judging by that rule, I have thought it proper to extend the face of the sheep, as indicating length of carcase.

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THE ROAD-HORSE.

This mare, of the true road kind, is a portrait from life. She is of a true form for all saddle-horses, though rather longer in the leg than some very useful-shaped road-horses are. I have endeavoured, in this and the two following plates, to delineate a serviceable horse of each kind, of the greatest action and most elegant form, so as at all ages to pay the best for what it has consumed. The race-horse has been omitted, as being an animal in which comparatively few persons are interested; but those who would judge of the proper form of this horse, I recommend to inspect the plate of Eclipse, which is to be seen in many print-shops.

THE COACH-HORSE.

This is a supposed horse, drawn from the author's instructions, as likely to be the most profitable for the farmer's use, his form indicating a horse of great power and much action, ready either to draw half a plough or carry the farmer, and that when made ready for sale will pay well for his keep. He is considered to be a cross of the best blood.—The bones below the knee being a principal object to be regarded in all horses, I have been circumspect enough to measure that part, which, in a horse of this description measures 9 inches; in the largest boned race-horses 8 inches; in road-horses about the same thickness; and in the best dray-horse 12 inches.—This horse is taken as a rough colt, ready for sale, or fit for the dealer's purpose: the best of the kind ought to stand from 15½ to 16 hands high.

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THE DRAY-HORSE.

This is a portrait of a stallion, the property of Mr. Beaufoy, taken from life. His dimensions are as follow:—Height 17½ hands; length, from where his ears stand to the part the tail is set on, 7 feet 5 inches; round the girth, or thickness, 7 feet 6 inches; perpendicular depth of the collar he draws in 2 feet 3½ inches; breadth across the breast 1 foot 9 inches; breadth behind, across the thighs, 1 foot 10 inches; fore leg, from the knuckle-joint to the knee, 1 foot 9 inches; from the knee to the ground 8 inches; round the leg-bone 12 inches; from the ears to the back of the shoulder 3 feet 7 inches; thence to the coupling of the loin 1 foot 6½ inches; thence to the tail 2 feet 5 inches; length of the head 2 feet 6 inches; ears 6½ inches; round the muzzle 1 foot 10½ inches. This horse is superior in shape to any other horse of the kind I ever noticed.—It will be observed, I have objected to draught-horses with very upright fore-hands, viz. having the shoulders cast much in the back; but in this horse, notwithstanding his fore-hand is much up, the collar stands very upright; and although the blade-bone is erect, there is so much muscle and flesh, and he is so deep in his girth, that the saddle

would rest in a proper manner, so as to carry the rider at some distance from his movement.—From this horse's shape, I am doubtful if it be not possible for a saddle-horse, so formed, to be a horse of great action, and a safe goer, though contrary to general opinion, when the blade of the shoulder is upright: I am warranted in my conclusion by the make of the hare, rabbit, deer, greyhound, and almost all swift animals.

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THE BERKSHIRE PIG.

This pig, taken from life, was the property of Mr. Ambridge, carcase pork-butcher, Compton-street, Clerkenwell, London; it was supposed to be under twenty weeks old, as it had not cast its teeth, and pigs usually change their teeth at the age of from twelve to sixteen weeks, after which time the tushes begin to grow. The living weight was 129 lb: dead weight—carcase, with the head and feet on, 112 lb; pluck and liver 5 lb; gut fat 2 lb—in all 119 lb: consequently the loss in blood, guts, dung, &c. was only 10 lb, which is little more than one thirteenth part. But it must be remembered, that it had eaten very little food for several days, while travelling to market and in the possession of the butcher before being killed. This plate is as nearly like the original as possible, which may be thought to have been very fat; but, on the contrary, it was merely in pork condition, about an inch or inch and a quarter of fat on the thickest parts, as proved by the gut fat. The estimation in which this breed of pigs is held arises from the handsome form and great quantity of good flesh they possess, rendering them more valuable than most other shambles animals.

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THE CHINESE PIG.

Of this pig a particular description will be found in pages 255-259 of the second volume.

TREATISE

ON THE

Breeding and Management

OF

LIVE STOCK:

&c. &c. &c.

CHAPTER I.

NEAT CATTLE.

SECTION I.

THERE are several different breeds of this species of domestic animals. The following are such as have come under my observation.—

1. The Long-horned or Lancashire, including the Leicester or Rollright, breeds.
2. The Short-horned, or Yorkshire.
3. The Polled Yorkshire.
4. The Dutch.
5. The Hereford.
6. The Devonshire.
7. The Sussex.
8. The Suffolk Dun.
9. The Polled, Humbled, or Galloway.
10. The Kyloes.

11. The large Welsh.
12. The small Welsh.
13. The Alderney.
14. The Irish.
15. The Home.
16. The Fife.
17. The Argyll.
18. The Norlands.

All the different breeds ought to be nearly of the same shape or form, with a few exceptions, regard being always paid to their intended application. I shall first describe the qualities I conceive to be requisite in a Bull for the grazier.

SECTION II.

Description of a Bull.

BEGINNING at the head—He should have a small mouth, with thin lips; a quick, sprightly eye; ears thin, and fine at the ends, not much covered with hair; small horns, hanging downwards in a circular manner, of a yellow colour, chequered with red spots, and standing low on the crown; the head not looking coarse or large, but resembling that of a deer, as all fineness about the head denotes a great inclination to fatten: his neck, near to the head, fine both above and below, but gradually thickening, until it joins the breast and shoulders. What is termed the neck-vein should be very full; the upper part called the withers broad and strong, and well-fleshed where it joins the chine, which is a certain criterion; for any animal being fleshy in its upper parts (viz. the chine, the loin, and rump), is sure to prove what is called a good butcher's carcase: the neck, in length, should bear a proper proportion to every other part of him, be grown

well out of his shoulders, and appear lofty, his head standing up; with very little dewlap, or indeed loose skin on any part. His breast should be broad, and put forwards at the point or end; the top part of his shoulder likewise broad, and a little higher than his loins and rump, rising gradually, for a small rise in that part gives more weight of fine flesh: the outer part of the shoulder should be fine, not to shew any bone standing out, or any sort of coarseness. From the top of the head to the tail should be nearly straight, the little rise on the upper part of the chine excepted; the back broad, so as to carry the greatest weight in all his fine parts; the ribs standing out round from his chine, but not in the extreme, as it is found by the cutting butchers, that animals which are what is termed *high-ribbed* are found to prove light in the best parts, and very deficient in weight, from there being so large a hollow in the inside, where the ribs join the chine; the ribs should, therefore, be moderately circular, neither too high nor yet approaching to flatness, either extreme being wrong. The bones of the chine that stand straight up, to which the ribs join, should be as long as possible, nor ought the ribs in the lower part to turn so quickly as is sometimes observable in *fashionable* animals; nor should they be broader below than at the top, but forming a proper depth on the sides; and the rib should be near the huck, so as not to shew a hollow, even with an empty belly. The huck bone ought to be globular at the end, standing a little higher than the ribs or the rump, which latter should be long, and level with the back and ribs, carrying width near the tail: the two bones on each side of the tail, by some called the tut bones, should be about two inches lower than the tail, and not far asunder. The highest part of the tail should be about one inch higher than the chine at the rump; and the upper end of the tail, joining

the rump, of considerable thickness, but tapering downwards, so as to become very small at the bottom; the thickness above always indicating a great depth of flesh in the rump, and a deep chine all along the back, both within and without. The thigh should be well covered with flesh, so as to form a good round or buttock of beef, declining regularly towards the shank; but yet not so fleshy on the outside as to be what is termed *Dutch-thighed.* The legs should be straight; the twist, which is the part between the thighs, cloven low down towards the shank: the flank full and large, joining the cod, and rising towards the rump, so as when fat to put out between the thighs under the tail (which is an indication of inside fat): the tail should be thick at the top, tapering to the end, and short in proportion to the other parts, with little hair upon it. The hide ought to be elastic to the feel, like buck leather, rather thick than thin, but not in either extreme, as each frequently denotes bad feeding or fattening, particularly thin hides, or what are termed *paper hides.* His walk should be light and nimble, moving with his hind feet nearer to each other than with his fore feet, not shewing much light between his thighs. The hair should be long and soft, and in colour dark brown with some light red spots, intermixed with white hair, or brindled; for I do not know a more certain indication of a bad fattening animal than short hair (thickly planted), mixed with a kind of mossy hair. The carcase, taking a side view, should appear long, with small shoulders; to be of great length from the back of the shoulders to the tail, and well let down in the shanks: though he should stand high, the height should chiefly consist in carcase; and, notwithstanding his legs ought to be proportionably long to the other parts, they should appear rather short; the body *deep,* but *round,* not shewing hollows or weak places in any part; great shape being

by some breeders it is thought a recommendation for them to hang downwards, by others rather upwards. I recollect Mr. Bakewell coming into Lincolnshire, to look at a very noted, fine, long-horned bull from Warwickshire, and his disliking him on account of his horns standing too much up; but that proved to be only prejudice, as the bull got the very best stock, and was of infinite service in the county. Mr. Coats's famous bull, from which so much good stock was obtained, had horns standing up, and particularly one horn, being what is termed *stag-horned.* I could cite many similar instances to prove that it does not appear any certain criterion can be drawn in this respect; for it may be seen that the best of the Long-horns generally stand down, the horns of the Devon and Sussex up; the Yorkshire are frequently crumpled, turning round, neither up nor down, and some of them rather stag-horned: then again, the horns of the Hereford, very graceful and of moderate length, neither up nor down; those of many very good Scotch cattle stand up: in Ireland, the horns of the Connaught cattle (which breed, in colour, very much resemble the Long-horns) stand rather up than down, and they are by far the quickest feeding cattle which that country produces. The head, which should by all means be fine on the crown, should be set on like that of a horse; no loose skin or dewlap; the breast wide, pushing forwards before the two fore legs; the bones of the legs should be small in proportion to the other parts of the carcase, round, and straight; the joints small and even, with a round and short hoof; the arms tapering from the knee to the shoulder, and thick where they join that part, and the shoulder so formed as not to shew any joint on the outside; the part before the shoulder, called *the clot* by the London butchers, should be large and full, and rise upwards to join the fat on the chine, and across the

shoulder to the ribs; the chine broad behind the shoulder, the ribs extended in a wide regular manner, one rather farther out than the other, to the hucks, and the nearer the hucks the better; the ends of the hucks globular, and at a distance from each other; the rump long, level, and broad; the tut bones a little lower than that part on which the tail stands; the tail thick at the upper part, and gradually tapering downwards, so as to be small at the lower end, and the less hair on it the better: the thighs should decline moderately from the rump to the shanks, being neither very thin nor thick in that part, as a very thick thigh has a tendency to lean, black, coarse flesh, or to be what is called *leery:* the twist, or part between the hind thighs, should be full, and well let down to the cameril; the flank very full, rising upwards to the huck, and extending to the udder, so that the flank, twist, and udder, may all join the ribs, as I before observed in describing the bull. The flank is a part of much consideration, and the more it is thrown out in width the better, being in some measure round, yet *deep;* for there is a material difference between a deep-ribbed beast and a gutty one: those termed gutty are wider below than above; whilst the proper shape in the body of a beast is to be wider above than below, so as to carry the greatest weight upwards in its fine parts; consequently, the shoulders of a fattening beast cannot be too small, nor is the animal ever too long, if one part bear a proper proportion to another. The hide, in handling, should be elastic, easily taken hold of, and rise freely from the flesh, having a smooth, soft feel, like velvet. The upper part, from the crown of the head to the tail, ought to be nearly straight, with the exception of a small rise in the chine, from the fore side of the shoulder to the couplings of the loin and chine; this generally indicating more flesh in the upper parts, and which in all animals descends downwards. The neck, although it

should be fine and thin at the back of the horns, ought soon to become thicker, so as to be very thick in every part joining the shoulder. I do not know any thing in which the cow for milk and the cow for fattening vary more than in this, as the cow for milk cannot have too thin a neck.

The horns of all beasts ought to be small, let the length be what it may; and their gait light, treading very straight in the legs. As to colours, dark ones in every kind of cattle denote hardiness, but not always the quickest feeders: there are some light colours very quick feeders, such as yellow, dun, or even white; but the colour I am the most partial to is the brindle, intermixed with yellow, brown, black, and diversified with white. There are few breeds in England that do not vary much in their colour, except the Devon and Sussex, and I have seen good ones of all colours; but the sort of hair varying, is a very distinguishable mark in all fattening animals, and, though scarcely to be described by the pen, is easily discovered by the eye, having a sort of fruitful look, with a kind of bloom which conveys an indication of health, and is what I term *mellow* in its appearance.

SECTION IV.

Description of Milch Cows.

THE Cow proper for the dairy differing much from the fattening cow, a very particular description is required. It is scarcely possible that she can vie in flesh and appearance with the latter, which only gives a small quantity of milk, and whose food is therefore principally appropriated to the fattening of her. The draining of the nutritive juices by milking must, with very few exceptions, keep the milch cow low in flesh; whilst the cow

MILCH COW.

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with an aptitude to fatten will quickly decline in milk; for although she may for a few weeks give a proper quantity, she will speedily fall off after calving.

The features of the best milch cows, speaking generally, are as follow:—A small head, thin chap; the eye not particularly quick, nor yet gloomy; the horns small, standing high on the forehead or crown; the neck very thin and low, or what is termed *ewe-necked*, viz. hollow from the horns to the shoulder; little dewlap, very narrow in the breast, the same at the top of the shoulder; light in the forequarter, and a hollow at the back of the shoulder, with little flesh along the chine; sometimes tolerably well formed on the hucks and rump; thin in the thigh, and very frequently crooked hind legs, or, as it is called, *sickle-hammed*; much longer in the fore legs than in the hind ones; better let down in the hind parts than before, *but very little inclined to flesh anywhere*; the hide very thin; a small tail, with little hair upon it; and the less coarse hair on any part the better. Yet, after all, it is possible a cow may be so formed as just described, and not very good for milk without the following properties, which must be particularly attended to:—The udder should be of equal substance in every part, and not remarkably large; for if it be, it will be more inclined to flesh than to milk; but there must, nevertheless, be substance sufficient to retain a proper quantity of milk, though when the milk is drawn from it, the more this substance is diminished the better. Before the cow is milked, although the udder may be hard, every part of it should feel alike, that is, not in lumps. The skin of the udder should be very thin, the paps standing square, and at equal distances every way; they should not be very large, or considerably thicker near to the udder than at the end (which is termed *bell-papped*), but nearly of the same substance throughout, being at the top or end rather drawn to a point; for when a cow's paps are very

broad at the extremity, the holes are often larger than they ought to be, and she is apt to drop her milk;—I have known cows lose in this way from one to three or four quarts daily. The show of her udder should be nearly of equal size before and behind, but if any difference, the largest before; for when a cow has the greatest show behind, and gives a greater quantity of milk out of her hindmost paps, it is an almost certain indication of her declining in her milk in a short time after calving; on the contrary, when the udder puts forwards, the cow gives as much or more milk before than behind, the milk veins being large and strong, particularly that vein which runs from the udder to the buck, and from the udder to the navel.

But, notwithstanding cows of the above description are more certainly good milkers, I have had a heifer, of the Yorkshire kind, which, with her first calf, was of as perfect a shape as it is possible to describe, either in regard to carcase or the points proper for milking: she gave twenty-two quarts a day for six months, and stood her milking for three months more at from eighteen to twenty quarts daily; her size not very large—when fat, would come to about 740lbs.

I purchased two heifers of the improved, or fashionable, breed for fattening, at very high prices; they were so nearly alike, both in form and colour, as scarcely to be known apart. They were of a make directly contrary to that usually recommended for milch cows, being fine in the head, with a small mouth and thin chaps; short in the leg, standing remarkably straight, and small bone; their ribs were round, and well thrown out; their bucks wide and globular, rumps long, and straight as a line from the horns to the tail; small shoulders, and particularly well let down in the fore-arm and thigh; without any dewlap;—altogether being of the exact description for

fattening, but opposite to that for milch cows: their only apparent good quality was in the udder, which was round, the paps standing perfectly square, the milk veins strong and full of milk. One of them, which proved a very good milker, had the greatest show before, and her paps were smaller than those of the other, whose show lay much more behind; so much so, as to be troublesome to her when she walked. They each gave twenty-two quarts a day for two months, and it was impossible to determine which was the best, when they were both taken grain-sick, a disorder that occasions cows to decline much in their milk, for which a cure will be given under the head of "*Cures for Disorders in Cattle.*" The best heifer rose again in her milk to the same quantity as before; the other dropped about four quarts a day, and began to fatten, after which she continued declining to about twelve quarts, but made good shambles beef, and was well sold. The former heifer was afterwards seized with the blain, which caused her to drop again; but when she recovered, she rose to her usual quantity, and proved, with proper feed and attention, a perfectly good milch cow.—I have been particular in mentioning this occurrence for two reasons; first, as determining the question, whether it is possible for a cow to be of a make for fattening, and at the same time a good milker; and secondly, that the show ought to push forward, for the cow to stand her milk. This was the first proof of the kind I observed; but since that time I have seen many similar instances.

Not having particularly mentioned the size of a milch cow, it may be necessary to give the reader some information on that head. The largest cows, if of a proper make, generally give the most milk; therefore, none are equal to the Tees-water or Yorkshire cow: but the kind of food in readiness, must be the first consideration. If strong land and high food, the cow I have just men-

tioned, should be kept; but if poor land and weak food, a Suffolk or Welsh cow: for on weak, poor land, in all probability, a small cow, of a proper make, would give more profit than a large one. There are some home breeds good milkers for their size. The heifer I have above spoken of was kept as high as a cow could be kept, on rowin hay and distillers' grains—composed of about half barley-meal or buck-wheat, and half malt. I knew another cow, in the hands of a cow-keeper, of nearly as perfect make in every respect, which gave forty quarts of milk a day for some time after calving, and seldom less than thirty from that period till being dried for calving again. I particularise these two cows, as an encouragement to breeders to endeavour to unite in one animal the qualities requisite for the shambles and the dairy, which, by great attention, I think is to be effected; and it would greatly enhance the value of milch cows, the best of which, at present, being of improper make for fattening, are sold by the London cow-keepers, after having been milked three or four years, for what is called *cag-mag*, at about 3*d*. per pound, producing not more than from 3*l*. to 5*l*.; whereas, were the two properties united, they would sell at 8*d*. per pound, and fetch from 20*l*. to 30*l*. with little more expense to the cow keeper.

Having great reason to believe, from my own experience, that this object is to be attained, I shall relate some circumstances to shew the reader my ideas are not merely conjecture. My father, who was a breeder and grazier for many years, had milch cows of three distinct breeds, but all short-horned, and nearly of the same size as to weight: they were all kept alike, the offspring the same; and the stock all stinted by the same bull every season: one breed always continued to be the best milkers. The weight of the oxen from these cows, at five years old, was from 1,100 lb. to 1,260 lb. and in some rare instances, even greater: all fattened at either grass or

hay, but never both; about four months at grass, and about five at hay, without either cake, turnips, corn, or cabbage, which foods were not known in those parts at that time. My father, for two or three seasons, made use of a bull from Warwickshire, which did not appear to be either of the long or short horned, but of a mixed breed, and the stock produced from him had the greatest aptitude to fatten. They were all good feeders; but I will mention one ox in particular, to shew their proof: he was kept in the straw-fold during the winter, and worked at different times, but not to plough or harrow; he was put to grass in the beginning of May, and in September sold to go to Wakefield, a distance of about eighty miles. When killed, he weighed 1,260lb. or 90 stone, 14lb. to the stone: loose fat, 266lb. or 19 stone. The heifers also, with such aptitude to fatten, proved remarkably good milkers, superior to the cows they were bred from: and for thirty years the breed of the cows that were the best milkers in the beginning so continued; and this bull increased their value, so that they not only became more quickly fat, but carried with them every perfection as good butchers' beasts. From this circumstance, and some other similar observations, I have not the least doubt, that were the bull calves from a breed of cows of a proper shape to fatten to be saved, to get store stock from the best milch cows, and that from time to time attended to, a breed might be procured with those two excellent qualifications; the advantages of which would be wonderfully great to the community at large, but more especially to the London cow-keepers.

Having recently experienced the difference between the milch cow that will fatten at the same time that she gives a large supply of milk, and the one that will produce milk only, I shall take the liberty of relating the circumstance.

I purchased a cow in the market for 25*l.* and put her

in the same stall with one of a stock of inferior cows I had previously bought at 20*l.* a head: they were fed exactly alike, both as to quantity and quality, from the first week in May till the middle of April following. The 20*l.* cow gave twelve quarts of milk daily, the 25*l.* cow fourteen quarts, for about one hundred and eighty days; after which time the latter fell off, and began to fatten: the 20*l.* cow did not fall off so much, as she did not fatten: but, on the whole, the larger cow averaged about two quarts a day more than the other during the time they were together—three hundred and thirty-five days; and a quart of milk being sold to dealers for 3*d.* makes 6*d.* a day, therefore the advantage in milk was 8*l.* 7*s.* 6*d.* The best cow was sold fat in Smithfield for 22*l.*; the other cow, if she had been sold at the same market, would not have fetched more than 5*l.* although in good thriving condition; not being fat enough for shambles beef, she must have gone for *cag-mag*: consequently, the best cow having paid in milk, deducting the loss on being sold, 5*l.* 7*s.* 6*d.* and as the small cow would have lost by sale 15*l.* the difference in profit between the large cow and the small one is 20*l.* 7*s.* 6*d.* in three hundred and thirty-five days. It must, therefore, be evident, that those large cows with an aptitude to fatten, and at the same time giving proper quantities of milk, are infinitely more beneficial than the small inferior cows, though both of the Yorkshire breed; shewing plainly the great loss that breeders, as well as the public, sustain by introducing an inferior animal even of the same species.—And it may here be proper to remark, that this experiment fairly shews, a large cow will not take more to bring her into proper condition than a small one; though this is a general idea: nor do old cows require more food than young ones or heifers; for this I have likewise proved, in a variety of instances, is as utterly void of foundation. Indeed, all cows, whether old or young, large or small,

consume nearly the same proportion of food. And I have found, during my experience in keeping cows, that they will seldom eat more than the quantity usually allowed them. I have tried the largest cow of seventy in number, which I kept for a year and half, with only one or two pounds more than her stint, and though she has sometimes eaten it, she always loathed the next feed.—To ascertain whether a sort of cow might not be procured that would be satisfied with less food, and at the same time be of equal profit, I bought two very old cows, two half-horned heifers inclined to fatten, two very large Yorkshire heifers in their first calf, several large Yorkshire cows of middle age, an old Welsh cow of a rather large kind, and a half-horned old cow; they were all stall fed; but I could scarcely perceive any difference in the quantity they respectively ate, excepting the last two, which did not consume so much, by about a couple of pounds of grains and chopped hay daily, as the others. They were fed three times a day, the last time being at night. One of the half-horned heifers was very fat when I bought her, for 28*l.*; she milked well for four months, when I sold her fat for the same money.—It may be proper to notice, that the cows called by the London cow-keepers *half-horned*, are a cross between a long-horned bull and a short-horned cow.—One of the Yorkshire heifers milked very well, but dropped her milk, or milked herself, which is a great fault: although milked regularly at four o'clock in the morning, she would be found to have apparently a considerable quantity under her, and would milk herself all the way from the field to the cow-house; she could force the milk out in such a manner as to produce a continued stream from the four paps, and by placing a pail under her, a quart of milk has been saved during the time of putting on the hopples. She varied in her meals as much as four quarts in a morning. To avoid this defect, buyers of cows should be careful to ob-

serve the make of the paps, as before mentioned, which is generally a criterion, though cows properly formed are sometimes guilty of the same fault. The other Yorkshire heifer fattened, and became greatly improved: she was long in the leg, and *goose-rumped*, that is, short in the rump, with the middle bone rising up; low on the part where the tail stands, and wide; without any recommendation as a fattening cow, but a beautiful head and quick sprightly eye: she cost 20*l.* and sold for 22*l.* in six months, milking the whole time.

The best milch cow I had nearly resembled the description I have before given; and could not, I believe, be rendered fat by any means whatever. She gave regularly thirty quarts of milk a day for six months, which I find to be a very unusual quantity, it seldom exceeding twenty-six: but it should be remembered that the London cow-keepers, although they feed their cows well, are compelled to milk them at irregular periods, for the accommodation of the dealers—at from four till six in the morning, and from twelve till two in the afternoon; that is, leaving eighteen hours between evening and morning, and only six between morning and evening; which must be very injurious, as is likewise the practice of letting them lie on bricks without litter. The cow I have before spoken of, as giving forty quarts daily, was kept by a farmer near Liverpool, and fed on lintseed boiled to a jelly and mixed up with wheat bran: she was well littered during the winter, and allowed the best grass at all times the seasons afforded. The London cowkeepers average the quantity of milk obtained from a number of cows, including those that are dry, at about six or seven quarts daily.

Before quitting this subject, I think it necessary to observe, that a cow with a head like the bull is seldom either a good milker or a good feeder, and therefore should be rejected.

SECTION V.

General Observations on the Process of Milking.

FEEDING at the time of milking is very necessary; for when a cow is eating, she gives her milk more freely, and the motion of the jaws in chewing will generally prevent her from holding her milk: but with some cows it is found requisite to use the marrow-bone of a leg of mutton, by tying a piece of rope to each end, placing it in the mouth of the cow, and then fastening the rope at the back of her horns in the form of a bridle. Hoppling is likewise essential, for many reasons: if the cows be milked in an open place, and not tied up, they are less liable to break from the milkers; but when a cow is not hoppled, she will sometimes, through fright, or from the push of another cow, break away when in part milked, and probably not let the milker finish the milking; which is highly injurious to the cow, as such accidents will not only cause her to decline in her milk, and, by repetition, to become dry sooner than she would or ought, but the milk which is left will not unfrequently bring on disorders endangering the life of the animal. Hoppling is also proper when a cow has a sore pap, a disease which is very common; and, as a preventive, it is a good and clean way to wash the paps and udder with cold water, before milking: for if a cow has a sore pap, she frequently will not stand to have the milk drawn; to effect which completely, much attention is required, as by suffering the milk to remain, the pap festers, and, becoming more inflamed, the disease extends to the udder, bringing on the gargles; from which cause the paps are frequently lost, for the loss of paps in milch cows

generally arises from bad milking and improper treatment.

Another very material consideration is, to be as regular as possible in the times of milking; this is most necessary to be regarded, and is the means of obtaining more milk and for a longer period. When the milker begins to milk one side of the udder, he or she should take the fore pap and hind one on the opposite side, and continue to draw them till the milk ceases coming; and not by any means milk them alternately with the other two: for it may generally be observed, some time elapses before the milk comes freely; certainly, therefore, when it begins to come, and the milk veins are open, it must be proper to keep to those paps. Having milked the other two, stroak and rub the udder with the hand, and then try all the tets again, for part of the milk lies higher up in the veins, and should have time allowed for coming down.

If the cows are in a house, where the milker can go a second time to *strop* them (as it is termed), it is very proper to do so; for I have known many cows give a quart of milk in ten minutes after being milked, though the milker had seemingly drawn every drop, which shews it had not time to come down into the paps during the first milking. Leaving milk in the udder, it is well known, will cause a cow to go dry.

Cows should be treated with temperance: never strike them: if you strike a cow, she is sure to resent it and strike again. Some cows have a habit of kicking when they are milked, and it is usual to confine such cows with two pair of hopples, above the cameril and below; but this practice often renders their legs sore, which causes them to kick worse: for such, therefore, another expedient must be adopted, which is, to tie a rope tight round the

body of the cow, directly before the udder and across the loins; by this means she is effectually restrained, or at least I never saw one kick when so treated; though this method must be avoided if the cow be far gone in calf, as there is some danger of making her slink it.

SECTION VI.

Directions for attending the Milch Cow at calving.

It may be necessary to observe, that all cows should go dry some time before calving, six or eight weeks at least, and during that period not be very high fed: by this treatment they will milk much better the next season: for should the cow spring for calving in the least before she is dry, the milk will fester, and cause a sort of gargle. For want of the above precaution, I have known cows not give a drop of milk at the time they calved.

If cows be very flush of milk a few days before calving, it will bring on what is termed the milk-fever, which occasions them to fall, after calving, as if the use of their limbs were taken from them. The cause of the disorder, in great part, arises from a sort of stoppage of their milk, and a violent fever and costiveness ensue; to prevent which, I have found it necessary to milk them, and also to give them a dose or two, or sometimes three, of physic, composed of one pint of salt in a quart of chamberlie: take care that the salt be well dissolved, and give it to the cows fasting in a morning. During the day let them be out of doors, where they can get plenty of cold water: but by no means give them warm water, which I have known to occasion serious consequences. The mixture of salt and chamberlie renders them thirsty; and the exercise they are compelled to take, in obtaining

water, is very beneficial, for at no time is it of more consequence than about this crisis. The medicine likewise causes them to void both much dung and urine, which cools their inside, and puts the blood in a healthy state. It may be known by their excrement how many doses are necessary; and it may sometimes happen they will want a dose every other day.

Being apprised that many cow-keepers had sustained very heavy losses by having their cows fat at the time of calving, and my cows being in a very fat state, at the same time knowing that cattle in most disorders die costive, I attentively considered the state of their bodies, by carefully examining their excrement while they were in the house. I attended them by four o'clock in the morning, when they had remained about ten hours un molested; and finding those cows which were near calving had voided less dung than their usual quantity, and that it was hard and slimy, denoting a costive habit, I proceeded as above described, and they all calved with the greatest ease, and cleaned very well.

I should also remark, that I had these cows, near calving, driven about four miles daily. This idea occurred to me from seeing the cows that the jobbers bring to Smithfield calve with such quickness and ease: the travelling loosens their bones, makes them void much dung and urine, and emptying their bellies thereby greatly facilitates their delivery On the contrary, by being suffered to remain inactive, and without any preparatory medicine when they are in a costive state, and their intestines being very full, great heat must necessarily be occasioned within them, which obstructs, in every possible way, the delivery of the calf.

After a cow has calved, it is advisable to let her have an opportunity of drinking as much *cold* water as she will, but by no means *warm* water; the latter opening

the pores, and letting in cold air: warm water is diluting—cold is bracing. It may be observed, that when cows calve in pastures, if there be water in the place, they are almost sure to calve near it. Nature has taught them what they want: by drinking much cold water, their urine is increased, and the continual straining to void it, causes them to force their cleaning.

It is a custom with many people, if a cow calve in a pasture, to drive her into a house, and take the calf from her immediately, before she has licked it; some saying, if the cow be not tied up, she will eat her cleaning, and choak herself. This is a most dangerous proceeding; it will cause the cow to sweat, and in the course of an hour she will be covered with a kind of dew, when, the pores of the skin being open, cold air may occasion the worst effects. Taking the calf from her is quite contrary to nature: the slime upon the calf is saltish, as is the cleaning likewise, and they form, in all probability, the most proper physic that could be devised for her: the licking of the calf and eating the cleaning will cause her to drink much water, keeping her body open, which is almost the only necessary consideration at that time; therefore, whatever may be her situation, out in the air or in the house, it ought not to be changed. Her food may be nearly the same either in the house or out, always avoiding every thing warm. By those who feel inclined to be better nurses than common, mashes of wheat-bran and oats may be given *cold*. But I am inclined to think it is the safest way of acting, to continue the same kind of food and treatment to her for at least ten or fourteen days after, as she had been accustomed to for fourteen days before, calving; for if the food be changed, the state of the blood must also in a little time be altered, and that may cause various disorders. Let the calf suck her for seven days, if in the

house; and if the calf be tied up, milk the cow before it is put to her: by this means she will naturally come more kindly to her milk; while the calf by sucking and beating with its head will soften her udder, and draw out any lumps or kernels that may be formed in it. If the cow be in a pasture, I should prefer letting the calf remain with her nearly the same time.

Where many cows are kept, it would be of great advantage to have a house appropriated for them to calve in, which should be spacious enough to admit of a windlass being fixed behind, very low down, that, in cases of difficulty in assisting the cow, a rope might be fixed to the feet of the calf, so as to draw it away in a slow, easy manner. By this kind of power, the rope would retain its hold, and not give back like the power of horses, or even that of a number of men, which are sometimes, in particular cases, obliged to be employed. Horses are liable to draw in an irregular manner, which is very improper; while by means of a windlass it would be easy so to regulate the force used, even when the hand of the man is in the cow, as to draw either gently or otherwise, as the case requires; and the strength of one man at the windlass would operate with better effect than the assistance of twenty men acting according to the present method. To render the house complete, there should be one or two posts of sufficient strength to tie the head of the cow to, with strong ropes, to prevent her from drawing back. It will also be necessary, in case of the calf coming wrong, presenting the fore feet, and the head lying back, with no apparent possibility of saving its life, to have in readiness a knife made for the purpose with a sheath to it, for the man to put into the cow: the sheath should be so formed as to allow of a small piece of rope being attached to it, to draw it from the cow when the man has unsheathed it. On this occasion, the skin round-

the shoulders must be cut in such a manner as to admit of their being drawn away one at a time; for which purpose it would only be necessary to make an incision above the knuckle quite round: then the man being stationed at the windlass, whilst he is drawing out the shoulders, the other man should keep his hand in the cow, to remove any obstruction, such as where the shoulders join the ribs, to cut the flesh, and set all at liberty. The shoulders being drawn away, a halter should be secured on the head of the calf, to keep it in a straight direction, and another rope round the neck; for when the head has laid back, it is apt to incline to the same position, which would be prevented by the halter, and the rope round the neck would be secured, while by drawing at both the head and neck not so much stress would be applied to one part. I have known an instance of the head being pulled off by the power of horses, and its being necessary in consequence to turn the calf and take it away by the hind legs. A good method in a case of this kind is, to turn the calf in the cow at first, and extract it backwards; as there are three points to manage in the fore part, and only two behind: and it is almost impossible to fix a rope to the head of the calf sufficiently secure to draw it away, without killing it. There is another position in which the calf very frequently comes, and which is attended with considerable difficulty, that is, when it presents backwards, with the hind feet lying under: this is readily discovered, by the tail appearing first. When the calf comes in this manner, it is very common to put ropes round the calf's legs, about the camerils, and draw them away double, which is a bad method. I have seen instances of great injury being done to the cow by this practice, such as sometimes bringing out the calf-poke with the calf; for the force required to draw away the calf—the hind feet lying

under, and the ropes being fixed round the sinews—causes the feet to spring, and take hold of the calf-poke; which, and the resistance occasioned by the hair of the calf, have turned all out together. When a cow thus treated has died in calving, I have carefully examined the inside, and have found the part against which the feet pressed much wounded, with a very distinguishable mark they had made in being drawn through the eyes- or aitch-bones. To avoid this danger, I have found it necessary to have the cow put in a position with her hind parts raised much higher than the fore parts, so as to force the calf forwards and prevent the labour-pains of the cow from forcing the calf, and thereby hindering the man in turning the feet to a proper position. To effect this properly, she should be laid on her back, when there will be no danger of the feet pressing or bruising any part: by this means room is given to turn the legs, and the calf extracted with very little difficulty; whereas I have always found it difficult, and sometimes impossible, to turn the legs when the cow was either lying or standing in the customary position. To throw the cow on her back, put a rope round her neck, leaving the two ends of equal length, and long enough to reach to her hind legs, in the same manner as the smith ties the beast to shoe; then take a piece of wood of a proper length, with a grain or fork, and when the hind feet are tied, put the fork under them and throw the cow; after which, by placing some straw, formed in proper bundles, under the hind parts, she may be bolstered up to the position required. The man who is to secure the calf in a proper form to be extracted, must have a small rope in his hand, with a noose, so that he may put the rope in double; and when he has got it past the feet, another man should draw it gently, while the man who has his hand in the cow will be able to guide the feet, and

keep his hand in such a position as to prevent them in turning from bruising the cow. When both the feet are got out, there is seldom much difficulty in extracting the calf, excepting that sometimes the hucks and back-bone will occasion resistance, on which account it is necessary to draw down towards the udder of the cow. But I have observed that a calf's coming backwards often occasions its death, which takes place when the calf is got out as far as the breast-bone; therefore, great caution should be used to raise the calf when it presents that part, so as to alter the position, and draw in a straight direction. There is never the same necessity to draw downwards when a calf comes backwards, as when it comes forwards; for if a calf draws hard backwards, the back-bone may be broken if it be not drawn nearly straight; it is therefore advisable to let a man put his arm under it, to bear it up. When a calf comes forwards, as it ought to do, the nose of the calf and the fore feet appear in the same direction; and in merely drawing the fore feet, the head is often nearly brought out: the fore legs are a sort of protection for the breast-bone, and there is no danger of breaking the back-bone in drawing low, when a calf comes right. When the calf-poke happens to be turned out, before it be put in again, take cold spring water and alegar, of each an equal quantity, and wash the parts very well; but carefully avoid applying any thing warm, greasy, oily, &c. Sometimes a cow will force out the neck of the calf-poke, called the oxroad, when the same application is also necessary. To obviate this danger, an apparatus has been contrived of leather, resembling the breechings of a cart-horse saddle—and which, as prevention is ever to be preferred to a cure, is much to be recommended: to fix this on, the cow must have a surcingle round her in the lisk, before her udder, and from the upper part a tail-band or crupper

to fix round the tail, a broad piece of leather extending over the fundament, and fitting tight on the part where the neck of the calf-poke appears, which leather must be carried between the legs, dividing on each side the udder; the breeching must be made fast to the surcingle on both sides. This invention is more frequently serviceable before calving, than afterwards.

The misfortune above described happens to cows much oftener in houses than in pasture, which arises from their being improperly formed.—A full account of the erection of such buildings will be found under the head COW-HOUSES.

SECTION VII.

Rearing Calves for Store Stock, in the best and cheapest Manner.

To rear calves advantageously requires a great degree of attention. Suckling them on the cows is certainly the best mode, where the value of the milk is not of greater consideration. The most common method is, to rear them on skim-milk; for which purpose the milk may be kept twelve hours in summer, and forty-eight in winter: before it is given, it should be boiled, and let stand till reduced to a proper heat, which is a few degrees above that of milk taken immediately from the cow, as when the calf sucks it out from the udder, it is necessarily a degree or two hotter than when milked into a pail. Milk given to a calf in a cold state almost certainly causes it to skit, a remedy for which will be given among "*Cures for Disorders in Cattle.*" Two gallons of milk daily will support a calf till thirteen weeks old, when it will live on hay and water, if the winter season; and if summer, on good grass. It is of material consequence to be very regular in the hours of feeding, about six in the morning

and six in the evening will be found the most proper in summer, and in winter about eight and four: during the stillness of the night the calf sleeps much, and sleep is always found to be fattening.

Calves may, if necessary, be reared with a very small quantity of milk after they are one month old; at which time, to wean them gradually, two quarts of milk, with the addition of a small proportion of lintseed jelly mixed in the milk, daily, will answer the purpose very well; or they may be supported with two quarts of milk a day, by adding a sufficient proportion of hay tea. This tea is made by placing a quantity of good hay (if it has had a sweat in the stack, is of a brownish colour, and feels clammy like tobacco, the better, *but all hay should have that glutinous feel to be fattening)* in a tub, pouring boiling water upon it, and covering it up to keep in the steam. It ought to be prepared twelve hours before using; when the milk being boiled, it should be added, till the mixture is reduced to a proper heat. Pot liquor is a very good substitute for milk, especially that in which bacon has been boiled, as it is of a nature to keep the body open—a consideration particularly to be regarded in rearing calves, which are very liable to be costive. After the time the distemper raged in cattle, my father raised two calves entirely on pot liquor; one of them became the largest ox he ever bred, weighing, at five years old, 120 stone, 14lb. to the stone. The great Yorkshire ox shewn in London, belonging to Mr. Flint, bred by Mr. Dunhill of Newton, and fed by Mr. Foster of Scausby, both near Doncaster, said to be the largest ever seen in London, was reared chiefly on pot liquor. From these two instances particularly (as many others have come under my observation), I am almost persuaded it is one of the best things given to calves, milk excepted. I

have also known calves reared on whey taken from new-milk cheese, which throve and became fine cattle.

There are many substitutes for the saving of milk in rearing calves. Turnips and potatoes are very good food, as soon as the calf can eat them; but they ought to be cut, as the animal's teeth are loose in its gums at that period, and therefore it cannot scoop them: they may be mixed with chaff of any kind, clover hay, oats, or bran. Some people give calves bean meal; but I do not approve of that, beans being too hot and strong a food for a young calf. Many of the substitutes I have mentioned are very nutritive and not expensive, and all of a nature to keep the body in a proper state, which is of material consequence. One pint of oats and a quartern of wheat bran per day will be found to nearly keep a calf, as soon as it can eat them. Calves reared at the kit are apt to suck one another at the pizzle, or ears, by which means they draw in much wind, and are rendered what is called *hoven;* to prevent this, it is necessary to tie them up, so that they cannot reach one another. When reared in this way, they should be enticed to eat hay as soon as possible; the best way to effect which is, to tie a small portion of hay, of a sweet sort (red clover is the best), in a rope, and hang it up so that they can reach it with ease: they will take to eating hay much sooner by this means than out of a rack. Attention to the littering is highly essential: oat straw is very bad, and causes calves to be lousy; wheat straw is the best. Great care should also be taken that they lie dry and clean, have good room even when tied up, that the place they are in is airy, and that they are never without plenty of clean water.

In addition to the foregoing recent improvements in the rearing of calves, I have discovered, by accident, a

mode of treatment far superior to any I had ever before experienced. From a want of houses for my rearing calves when I lived at Slane, I put them in a yard among hay-stacks; where, with the same quantity of milk, &c. they throve infinitely better than I had ever seen them do in a house. (Lentil or tare stacks would be still better.) By running among the stacks they readily learned to eat, and picked out the hay they liked best, at the same time committing less waste than in a house, where hay is given to them in racks; for when hay is given them in that way, there are many lumps mixed with it that are not fit for cattle, though proper for horses of a hardy kind; and should an attempt be made to oblige them to eat it all, they would almost starve first, and their growth be thereby greatly impeded.

During my experience with my father, and afterwards when acting for myself, I had constant reason to notice the great waste occasioned by the rearing of calves, according to the modes then practised. They were always supplied with the finest and best hay the farm afforded, much of which was dropped under their feet, and it was likewise necessary to clear the rack about twice every week. I certainly thought that, considering the small quantity of hay given to them, the waste was very considerable, but I saw no remedy. By the method of feeding them which I now recommend, to my surprise and gratification, there did not appear to be a pound of hay wasted all the winter by about a dozen calves, while they looked perfectly sleak, fine, and healthy, with scarcely a wrong hair upon them; at the same time that my housed calves were gutty, lousy, and had bare places on different parts. Nature is always consistent. Rain and snow, I am convinced, are of essential service to animals destined to encounter the vicissitudes of weather, by causing them to perspire, and consequently promoting their health and

strength. The value of the experiment did not end in the calves thriving better and with less expense in the stack-yard, but it extended to their well-doing the next summer, and, of course, giving them an advantage the winter following. In fine, the progress they made was astonishing; and if I were to rear ever so many calves, I would never house another.

SECTION VIII.

Rearing of Calves intended for Bulls.

When I resided at Slane in Ireland, I reared twenty-five bull calves in one year; about half the number were reared at the kit, the others sucked the cows they were bred from; they were all got by one bull, and out of cows similar one to another. To my then great surprise, those reared at the kit were, at year olds, by far the finest in the head and dewlap, which rendered them much more valuable for sale, as large dewlaps denote coarseness, though loose skin is objectionable in all animals intended to fatten. As the value of every animal is estimated by its appearance, I think this remark highly worthy the notice of such breeders as are in the habit of rearing calves for bulls, if it has not already engaged their notice. The reason why rearing at the kit makes them finer about the head and dewlap seems obvious; for when they drink the milk from a pail, they do not strain and jolt about as they do when they suck the cow, to effect which they are obliged to hold their heads low, and keep them stretched out, extending the part under the throat, so as in time to occasion much loose skin.

I should wish to impress upon the reader, that this remark is only intended to shew that art may sometimes assist nature; but that, though the animal is thereby

rendered more saleable, it is not any better qualified for a getter of stock.

SECTION IX.

Method of fattening Calves.

CALVES are fattened in the most speedy manner by what is termed *suckling:* which is thus effected.—The calf should be tied up in a confined, warm place, without light, and the less noise he can hear the better. By being kept in the dark, the animal is caused to sleep much during the day as well as night, which is very essential to a fattening calf; and, to avoid exercise as much as possible, it is better, where circumstances allow, for the cow to be let to the calf, than for the calf to go to the cow. The place where the calf is confined should be kept very dry; even if the straw with which it is littered were occasionally dried by the fire it would be of service; there ought to be nothing wet about it, for all damp is of real injury: the straw used should be quite sweet; for by the calf lying continually, or nearly so, on the same spot, any kind of smell the litter may have contracted will in some measure affect the flavour of the veal; consequently, whatever contrivance keeps it the driest and sweetest must be the best. Some persons have grates formed under where the calves lie, to convey the urine into an under-drain; but this contrivance I do not think proper, as there must be a cold wind arise from the grating. I have found no method answer so well as having the place paved in a slanting direction with bricks; for though boards are sometimes used, I do not like them, as when they get wet they continue so, and are then much colder than bricks. When the pavement is so laid, the moisture ought to be carefully swept out, at least twice a day; and the straw immediately under the calf cleared

away, and replaced with clean dry wheat straw, every other day. The calf should be tied short, to prevent its jumping and playing, as it cannot possibly take too little exercise. The manner of tying a calf up properly is, to put a belt round its neck with a swivel to turn, so that the rope may not twist in knots. Large lumps of chalk should be placed before it; and I am of opinion that rock salt would be beneficial. My reason for thinking that rock salt might be of benefit to the animal, arises from the many instances I have seen of suckling calves being found to have hair balls in their stomach, so closely woven together, that it seemed impossible they could ever pass them. The calf after the ball begins to form, makes no further progress in fattening; and this may be foreseen by its licking the legs of the cow at the time it is sucking, when, as there can be no other probable reason assigned, it is obvious to me it wants salt. I have experienced a wonderful advantage in being very regular in the times of putting the cow to the calf, and in always milking the cow before the calf sucks, to draw the cold milk from the paps, as that milk is of great injury to the calf, even if the animal could take that and the remainder of the meal; but if the cow give more milk than the calf requires, the first milk should be always taken away, as *a pint of the last part* of the cow's meal will fatten more than *a quart of the first.*

I will give the reader an idea of my knowledge, method, and success, in fattening calves.—About fourteen years since, in the month of June, when pastures are good, I bought a cow and calf for 15*l.*; the calf then seven days old: I put the calf in a place where it never saw any light but when the door was opened for the cow to go in and come out; nor could it move more than three feet from the post to which it was tied. The cow giving considerably more milk for two months than the

calf required, she was milked before being put to the calf, leaving little more than a sufficiency, as near as could be judged; and she was always striped, or stropped, after the calf had sucked (which should be done to all cows giving suck, as there ought to be no milk left in the udder after the calf has got its fill). Two large lumps of chalk were put before the calf. When it had been thus fed three weeks, I began to give it gin-balls, prepared by mixing a large wine-glass of gin in a plateful of the very best wheat flour, as much paste being made as the liquid would moisten, of which two balls were formed, each about the size of a smallish hen's egg. These balls were given to the calf by opening the mouth, and, taking hold of the tongue with one hand, pushing the ball down the throat with the other. The regular times of feeding were as follow:—the cow was let to it at six o'clock in the morning and six in the evening, and the gin-balls given at twelve o'clock in the day precisely. The calf sweated much, and, after it had done sucking the cow, used to delight in licking it over almost every part. I apprehend the sweating was caused partly by the gin-balls, and partly by the closeness of the place; though the place was spacious for the purpose, being about eight feet wide and fourteen long; but, as I have observed before, no light or air was admitted but what the crevice round the door let in, which could be but little, as it fitted pretty close. The calf had very dry clean wheat straw for litter, a little given every day; the whole of the litter being taken from it once a week. The place was paved aslant, with a grate at the outside of the door, so that no wet stood; and all the excrements, both of the cow and the calf, were carefully collected and removed every time the cow was taken from the calf, to keep the place dry and sweet. The result was, when the calf was killed, at twelve weeks and five days old, it

weighed 70lb a quarter, or 35 stone London weight, and sold in the market, in quarters, or joints for 8*l.* 19*s.* 6*d.*—at the present price in Smithfield, which is 7*s.* a stone and sink the offal, it would have produced 12*l.* 5*s.*—being sold at 8*d.* a pound fourteen years ago, which is a proof the veal was good in quality: the calf paid for the cow's milk each day 2*s.* 8¼*d.* or 18*s.* 9¼*d.* a week.

It may be necessary to say how the cow was kept, to remove any suspicion of her having been fed in an expensive manner. She was depastured on twenty-six acres, the land worth about 40*s.* an acre: the stock kept upon it consisted of fourteen cows, four horses, and one hundred and twenty-three sheep;—about four sheep and three quarters, one cow and one twenty-sixth part, and something more than one sixth part of a horse, to one acre: calculating eight sheep as equal to one beast, and supposing four horses to eat as much as five cows, it would be thirty-four beasts on twenty-six acres, which is one beast and little more than a third on an acre. This stock was kept from the first week in May till the last week in September, besides a number of pigs and about twenty geese, which animals devour great quantities of grass. Each of the cows had two pecks of grains daily; the expense of grains a little under 2*d.* a day: the sheep and horses lived solely on the pasture, which was mown whenever any part seemed to be so neglected that the scythe would take it, the grass raked up and carried to some horses in the stable, affording support for about one horse more all the summer. This circumstance shews the advantage of occasionally mowing the pasture to keep the grass short, and establishes the truth of the old proverb—"The nearer the ground the sweeter the grass."

The reader may observe in all my works that I

strongly recommend short pasturage, the benefits of which I was led to discover by stall-feeding, being at one time a great advocate for that practice, but in which, to my utter surprise, I found myself very much disappointed: the cause is obvious, grass and almost all mowable food losing their fattening property when high enough to mow; clearly proving that it is not the quantity, but the quality, of food, which should be attended to in feeding all animals. I have found, as will be hereafter shewn, that 10lb of lintseed cake, with the same proportion of hay or straw daily, will fatten a beast as quickly, if not quicker, than 18 stone or 252lb of turnips for the same time.—But to return to the cow: she was of the half-horned or home-bred species, of a moderate size, and would, when fat, attain the weight of about 750 or 800lb. The calf had much the same appearance; was of a red colour, with some white on the back: from its acquiring such an enormous size at so early a period, it must have been got by some large Yorkshire bull—a cross to which I have formerly objected. But when I lived at Slane I had a very large bull from Sir Joseph Banks, bred by his majesty; which bull, put to Irish cows of the long-horned sort, produced extraordinarily good calves for fattening, full one third more in value, with the same food, than those from Irish cows put to a bull of their own kind. The calves when calved are longer, and they grow much quicker; so that I have reason to believe a good Yorkshire bull of a lengthy sort is best for the purpose of getting sucklers. I was taught to believe the meat of such was not of a good quality; but this is erroneous, as it is superior to most of the London veal, being equally fair and more juicy, and was, in this particular instance, so much admired, that it will be spoken of as long as the butcher who killed the calf lives. Much nicety is required in fattening calves, and the calf

above mentioned had every possible attention paid to it; but though by much the finest I ever saw, or heard of, at Smithfield or elsewhere, and highly deserving the notice of the reader, I wish it more particularly to be regarded as a proof of the advantage attending short pasture, many further instances of which will be met with in the course of this work. The pasture I have spoken of was so closely eaten, that it was usual for travellers to ask if it was not a common (as it lay by the side of the road leading from London to York); and the cattle, horses, and sheep, being of a superior description, and either fat or nearly so, the notice of the stranger was more forcibly engaged and interested.

SECTION X.

Management of the Dairy;—making Butter, Cheese, &c.

For the dairy, the first object to be considered, is a proper situation, which should be airy and dry. The building should be spacious, according to the number of cows, and well sheltered from both sun and wind: if erected expressly for the purpose, the north front should have the greater number of apertures for the admission of cold air; and a sufficient quantity of trees should be planted on the south front to shade it from the sun. Where circumstances admit, it should be sunk at least three or four feet below the surface, proper drains laid, and an area made round it, to prevent damps. The access to it may be by a few steps; or the ground dug away on the north side to the width of six or seven feet, and a gradual slope formed to the door. The windows or openings may be covered with wire, such as is used for making sieves, which will freely admit the air and keep out flies. The sides of the door should be of

stone, and the walls very thick, covered either with a very strong stucco, or with glazed tiles. At the east and west end niches may be left for the purpose of ornament, and for the convenience of placing large jars or vases for cream, butter, &c. The frame destined to contain the vessels to hold the milk should be made of oak, and may be supported by stone pillars, and the pans (which are made for the purpose) of glazed earthen ware. Leaden cisterns are, however, in general use in large dairies, as the business would be much impeded by earthen ware, which would also prove costly, being very liable to accident, otherwise it is by far the sweetest, as cisterns or troughs lined with lead, from milk being of a corrosive quality, are apt to produce disagreeable effects, without frequent and good cleaning; therefore, where the business can be done by well-glazed earthen ware, it is very much to be preferred.

Dairies should, as nearly as possible, be kept of an even temperature, feeling cool in summer and warm in winter; to which end vaults, where they can be had, are the best. I acquired the knowledge of this latter circumstance from living in America, where the extremes of heat and cold are so great, that in winter the milk will freeze instantaneously, and in summer become so hot as to render an equal quantity of cold water new-milk warm. I was obliged, in consequence, to have the milk carried as soon as it was milked into the dairy, which was about seven feet below the surface of the ground, and so contrived as to have a flight of steps forming a sort of area. This was the very best dairy I ever knew; the milk casting the cream quicker and in greater proportion than I ever experienced elsewhere. Most dairy people are of opinion that milk ought not to be put into the vessels to stand till it is cooled, under an idea that the cream does not rise so well if the milk be

put in hot from the cow; which opinion I myself formerly entertained: but in America we strained the milk, during both summer and winter, hot as it came from the cow, carrying it immediately into the dairy, and had the satisfaction to find the cream rise in a very unusual manner, far better than by our former mode of cooling it before it was set up. Care should be taken not to admit wind into dairies, which I likewise learned in America. My dairy there had folding doors over the area, which formed a kind of hatchway; when the doors were not closely shut down, and the wind got in, it dried the cream at top, rendering it tough, in consequence of which less cream was obtained from a given quantity of milk in the same space of time: neither would cream thus dried give as much butter, nor would it be so well flavoured; for when cream dries it forms itself into cheese, as will be fully explained in the process of cheese making. Damps should also be prevented as much as possible. In America, in order to keep dairies perfectly cool, it has been found expedient to have what are called spring-houses, so formed as to admit a stream of water to enter at one corner, with a hollow place made round by the side of the wall, that a current may run continually. The middle part of the floor is so raised as to keep quite dry. The milk pans (which are earthen ware) are commonly placed in this current of water; but some observing men in that country have learned by experience that the milk put in the stream of water does not cast so much cream as when it stands on the floor without water, nor is the butter made from it of so fine a flavour; which seems perfectly consonant with reason, for damp places, in a greater or less degree, always cause a fustiness. Notwithstanding the great disadvantage of the American climate for making of butter, yet it is as good flavoured, with proper management, as any England can

produce. I am, therefore, fully persuaded that the formation of dairies under ground, even in this country, would be an improvement, both as to the quantity and quality of the butter, for cream being a fermentable substance, the even temperature would keep it better and more free from any rancid taste.

A dairy, to have every advantage, should be a detached building, with very thick walls and small windows, some on every side, so as to admit air, *but not wind:* there should be a vault for the dairy, spacious enough to churn in; a second or ground room, furnished with a boiler to scald the milk vessels, make the cheese in, &c. the cheese press being conveniently fixed to put the different vessels out to dry and sweeten, on a sort of cratch placed on the outside in an airy situation; and a third or drying room above for cheese, with one window, merely for light, on the north side; as, to dry cheese properly, there ought to be neither sun nor wind admitted. When the sun is allowed to enter the drying-room, it causes the cheese to run (called *slipping its coat)* and have a bad smell; and flies in consequence depositing their blow in such places, maggots will be produced. Wind occasions cheese to crack. There must be a kind of table contrived in the middle of this drying-room, with shelves fixed round against the walls; and a rack, formed with two equal sides rabbeted together at top and bottom, and spindles put through on both sides: the distance between these spindles must be regulated by the thickness of the cheese intended to be made. The rack must be placed on feet at a proper elevation from the floor, each foot of a conic or sugar-loaf form, and surrounded with tin, to prevent rats and mice from getting up, as cats can scarcely ever be admitted, on account of their fondness for new cheese.

SECTION XI.

Process in making Butter.

In this process much nicety is to be observed, particularly in regard to cleanliness. The proper heat of the milk when set up has already been investigated; the next consideration is, always to have clean vessels, which, if earthen ware, after every time using, must be scalded in boiling water. For this purpose a tub should be provided, large enough to contain them one within another, and in which they should stand some time: but, where there is a copper or pan of sufficient size, boiling is much better. Some saving may be obtained by rinsing the vessels with a small portion of water before they are put to scald, as it makes an addition to the pigs' food. When taken out of scald and wiped perfectly clean with a cloth kept for that purpose, they should be put upon the rack to dry and sweeten. When taken from the rack for use, they should be again wiped. In hot weather, if there be a small quantity of cold water put in the bottom of the vessel, it will cause the cream to rise more quickly; in cold weather warm water should be used. Let the water always be sweet and well flavoured; and it should be passed through the same strainer used for the milk. Great care must be taken to keep the strainer perfectly clean; the best and sweetest strainers are wooden bowls, with open bottoms on which a piece of fine gauze is tied; the bowl, cloth, &c. being carefully washed from time to time, and hung out in the air, as they are very liable to be out of order. Milk managed in this manner will keep in the summer from twelve to twenty-four hours sweet enough to make skim-milk cheese; in winter about three days, which is called six meals; and will stand boiling for

calves. Some persons use wire or horse-hair sieves to strain the milk; but they are both very improper, for it is almost impossible to preserve them clean and sweet. To make the best butter, milk ought not to be kept more than twelve hours, either in summer or winter, and churned every other day. A method is followed in some butter counties, of making two kinds of butter from the same milk: this is effected by skimming the milk in twelve hours after being put up, and then churning it, which makes a very fine flavoured butter; the milk is then suffered to stand as long as any cream will rise, being skimmed every twelve hours, which when churned forms a sort of faint unpleasant butter, that will not keep above a day or two to be eatable—shewing the propriety of not skimming the milk after about twelve hours, as well for present use, as for keeping.

In Ireland a method is practised of churning the milk and cream together; which seems very profitable where skim-milk cheese is not made. The milk is let stand as long as it wheys on the top, and then churned; by which means very good flavoured butter is obtained. While on my survey of Buckinghamshire, I saw an experiment tried, by setting up the milk of a certain number of cows, taking off the cream in a given space of time, and then churning it; afterwards, the milk of an equal number of cows was set for the same period to whey, as is practised in Ireland, before churning: the result was, that the cream in the common method produced 7lb. of butter, and the milk and cream together 11lb. The only difference in favour of the first method, in that county, is, they fatten hogs on the milk, though it is said that butter-milk will not fatten hogs: but in Ireland, butter-milk is an object of very great importance, it being the chief beverage of a great part of the population, who almost live upon it.

It should be remarked, that all vessels for the keeping of milk ought to be shallow, care being taken not to overfill them. Wooden vessels, round and shallow, are generally considered best in cold vaults, earthen ware in warmer situations, for long keeping; and leaden vessels for yielding the most cream. Salt is commonly used for scouring the leaden and wooden vessels; but I have reason to believe that lime would be a proper substitute, used once a week, as it would effectually prevent fermentation; for there is sometimes, from neglect, a sort of putridity in the crevices and corners of those vessels, which lime, being of a caustic nature, would prevent. Earthen ware requires only scalding, and with that alone is kept much sweeter than either of the other vessels can be with the greatest care.

Creaming milk.—This operation is performed by fleeting or creaming with thin shallow wooden dishes or tins, some of which have holes in the bottom. But skimming-dishes are only used for wood, or earthen ware; the leaden vessels generally having a hole in the bottom, with a plug made long enough to reach some inches above the milk, a pin being fixed on the top part to give it a twist for the purpose of fastening it, or pulling it out: by drawing out the plug, the milk is suffered to escape, while the cream remains behind.

Keeping cream.—When the cream is gathered, it must be put in a clean well-leaded earthen pot, and stirred with a stick, called a cream-stick, kept sweet and clean for the purpose, very well once or twice a day. The time of keeping must depend on the weather: if cold, it will keep very well for six or seven days; if hot, not more than three or four. If the land naturally produce well-flavoured butter, I am of opinion that letting the cream stand until it is sour, is of advantage to it, as to both quantity and quality; but, on the contrary, if the

land produce strong, rancid, ill-flavoured butter, the sooner it is churned the better.

Churning.—After the churn has been rinsed out with hot water in the winter, or with cold in the summer, strain the cream through a piece of thin but strong linen cloth, or canvas, sold for that purpose: the mouth or top of the churn being covered with the cloth, the cream is strained into it. This done, which should be early in the morning or late in the day, cover up the churn close; and if in summer, set it in some cool situation, but no place is more proper than the dairy, if it be constructed as before described. If in the winter season, and during very severe frosty weather, it may be necessary to set the cream by the fire-side previous to churning, stirring it, and turning the pot to warm it equally. At this time of the year, if the weather be very cold, it will be necessary to place your churn near the fire, or in some warm place; but if the butter will come in the usual time it will be better to avoid much heat: producing the butter commonly occupies about an hour and a half, from the beginning to the end of the operation. During the time of churning, have a kettle on the fire, containing some clean water, and pour a little in at intervals. In summer, cold spring water is required for this purpose. When you begin to churn, in the winter season, make quick sharp strokes, having a dull heavy sound, and continue till you hear it alter, when it will be light and more sprightly, the cream being broken, and some small bits of butter seen on the staff or lid. Then cleanse the lid, and sides of the churn, with your hand; and having put all together, cover the churn again, and with easy strokes, round and not to the bottom, gather the butter into one lump or body, leaving no pieces separate or unconnected. In summer you must observe to churn more gently at first, for sharp,

quick strokes will cause the butter to be soft, light, and oily; but after the cream is changed, the operation is precisely the same as in winter. The churning here spoken of, is with the upright churn; but it will be necessary to observe the same rules if any other description of churn be used. The common barrel-churn is very objectionable; for, during the winter season, if moved quickly at first it soon fills with wind, and the process is in consequence much impeded. Some experiments have been tried between the upright and barrel churns, with equal quantities of cream; and the results were, that the upright gave the most butter, being also better in quality and sooner obtained: and the same whether worked by horses or by hand. I have every reason to believe these experiments decisive; for it is the constant agitation of the cream that causes it to become butter, therefore whatever contrivance produces the most regular action must be the best; and the churn that stands still, while the dashes are kept moving, seems the likeliest to have that effect. In the common barrel-churn, the dashes being fixed, the cream frequently remains still; which cannot be the case either in the upright churn or in the barrel-churn with moveable dashes.

In America, the Dutch have introduced an upright churn of a make somewhat different from the one in general use in England, it being much wider at the bottom than the top; but it churns with a staff and dashes, the same as the latter. I had one of them when I resided in that country, and found the butter come sooner and more regularly than in any one I had ever before used; which I apprehend is caused by the drawing up of the dash to the narrow part acting with greater violence on the cream. The lid, or cover, is likewise differently contrived, being made to slip within

the churn, which in form resembles a small pail; and the top, or part through which the staff goes, is surrounded with staves, rising about ten or twelve inches above it, so that all waste, by sprinking or splashing, is prevented, for whatever is received in the top readily runs into the churn again. These upright churns are cleaned with great facility; for, the top part being open, the hand may be put into them, while the eye readily perceives any dirt, &c.: and they may be kept sweet, by being exposed to the air. There is another objection attending the barrel-churn, which is, the lid being made fast by a piece of cloth, it is apt to chafe, and the lint to mix with the butter.

After the butter is churned, and well formed, open the lid—or in the upright churn take off the lid—and with the hand gather it together, and take it out from the butter-milk, having a clean vessel, with some clean spring water in it, in readiness to receive the butter; then, with the hand or a butter dish, toss it to and fro, until all the butter-milk is washed from it. Having drained all the water from the butter, and brought it to a firm substance, it is advisable, as is the practice in Ireland, to draw a case-knife through the butter in every direction, which process will take out any hair or lint that may have escaped the strainer. This done, spread the butter very thinly in the vessel, and regularly sprinkle over it some salt clean picked, and made free from dirt or lumps; then work it well together, and, if in the winter season, having some clean water in a vessel to put it in, immediately make it ready for market. In summer time it may be necessary to let the butter stand covered with cold water for twelve hours, to set, before being made up for use or for market: it is not necessary to add the salt till the butter is ready to make up. In some counties I have visited, where much butter is produced, they use a sort

of brine, made by mixing a proper quantity of salt in clean spring water, letting it stand to dissolve, and then straining off the liquor from the sediment; they put this brine to the butter, working them together, and by this means the salt is said to be more regularly incorporated: it is, at the same time, a very cleanly method. The quantity of salt must be regulated by the taste.

Potting butter.—The butter intended to be potted should not be washed in water, to extract the butter-milk, for that process would cause it to become rancid; it must, therefore, be freed from the milk by working it very well with the hands or the butter-dish. It is not a bad method to weigh both the butter and the salt, to judge how to apportion them; but the taste, as you proceed, will generally be the best guide. The butter being opened, the salt must be well worked in, beating the mass with your hand, butter-dish, or beater, until the salt is entirely dispersed, and intermixed thoughout the whole of the butter; then having a clean earthen pot, well leaded, lest the brine should leak from it, first scatter some salt on the bottom, and afterwards lay in the butter, pressing it as hard down as possible: when the pot is sufficiently full, cover the top with salt, so as entirely to cover the butter. It must be kept in a cold, dry place, or the salt will melt; but should that happen, it would be proper to pour off the brine, and put some fresh salt at the top. If the quantity of butter be not sufficient to fill the pot, cover it with salt, and let it stand till the next churning, when, scraping off the salt, fill up the pot, as before directed.

Tubbing butter is generally performed in the same manner, but does not require the salt at the top and bottom. Some persons, after sufficiently salting the butter and filling the barrels, with a small stick make many holes through the butter, to the bottom of the

tub; and having prepared brine of salt and water, strong enough to bear an egg, by boiling and skimming it until no more scum rises, and the liquor is quite fine, which must stand till it is cold, pour it upon the butter, filling the holes to the top; when, letting it settle in them, they head up the cask. It is not unusual to boil a sprig of rosemary in the brine, a herb which is both pleasant and wholesome.

When to pot butter.—This may be done at any time, from the first week in May till the beginning of September, observing to do it early in the morning, and when the weather is coolest, for which reason the month of May is preferable; the air being then more temperate, the butter takes salt freely, and is the best flavoured, from the herbs and grasses being young, and in the highest perfection.

To make good butter from new-milk whey.—Boil the whey, and when boiling put some butter-milk into it, which will cause curds to rise on the top; skim them off, and put them into a vessel, where they must be suffered to stand two days, or until they become sour; then churn them, and they will produce butter for immediate use very little inferior to that churned from cream. This butter will not keep, but is very serviceable and good in pastry or for other culinary uses. Curds made in this way may be used for cheesecakes, &c. for which purpose they must be put into a linen cloth, and laid on a sieve over a tub, on a pair of cheese-brigs, to strain: when the curds begin to rise, the skimming must commence, and be continued as long as any curds appear; that done, tie the cloth, whey, and curd, altogether, hang them up in a proper place with a tub under them, and in about twenty-four hours they will be fit for use.—This is a very economical and excellent dish.

To make curds from new milk.—Take two thirds of

butter-milk, put it into an earthen vessel, which should be much larger than is necessary to receive the butter-milk only; then take one third as much new milk, set it on the fire, and when it is beginning to rise, remove it, let it cool a little, and then pour it into the butter-milk, stirring it about in the same manner as you would make posset: after it has stood for a small space of time, skim off the curds, and put them into a cloth that the whey will strain through, as is directed for the whey curds.

SECTION XII.

Method of making many Sorts of Cheese.

THE following are the kinds of cheese made from cows' milk only. On the Continent, the milk of goats and sheep is likewise used, from necessity; and we purchase the cheese so made as dainties, though possessed of the means of making it in greater quantities ourselves.

Stilton Cheese.—This cheese takes its name from the place where first made, but at this time very little of it is produced in that town. The method of making it was introduced by a Stilton man to Leicestershire, where much of it is now made. Stilton cheese varies much in quality, being sometimes so fine as be considered the best cheese produced in England, while at other times it is scarcely fit to eat; the difference arising chiefly from the manufacture and management. According to the nature of the soil, different management is required. In some places it is difficult to be made, as it will rise or blow in drying, so as to be of no value; this is occasioned by confined air, from having whey left in it of a fermentable nature. The greatest difficulty being to prevent this defect, I will first give the process for

that purpose. To prevent the cheese rising, some kind of acid must be used; probably alegar might answer, but my practice is as follows: Let about one fourth of the quantity of milk intended to be used for the cheese stand till it become sour and coagulated, or, as it is called by dairy-women, *loppered*, having taken care to skim off the cream before the milk is quite turned:—preserve the cream in a pot, as if for churning, until the milk is loppered. The day before the sour milk is made into curd for cheese, prepare a quantity of milk just taken from the cow, and make it into curd; when properly drained, put it into an earthen-ware vessel, adding a sufficient proportion of cold, clean, spring water, and let it stand for twenty-four hours. When the new-milk curd has been this time in water, take the loppered milk, and adding the cream skimmed from it (or more cream, if you wish to make the cheese very rich; but the cream from the milk so managed is generally quite sufficient), put to it one fourth more of milk about twelve hours kept, or what is termed by dairy-women *one meal old*, with its cream; then heat some of the sweet milk to a proper degree of warmth, and add the runnet to it: the smaller the quantity of runnet, the cooler the milk, so as it will change to curd, and the slower the process is performed, the better; as, in most cheese making, attention to these considerations causes the cheese to be richer. The quantity of curd put into the water ought, at least, to equal that of the old milk. Mix the different sorts of curd as perfectly as possible, by squeesing and kneading the mass with the hands; that done, put the whole into a deep narrow vat, the form commonly preferred for Stilton cheese. This sort of cheese requires only very light pressing, and must be frequently turned while in the press:—by being pressed lightly, the cheese will retain its richness; and by frequent turning, it will be of equal

goodness: for if one part be suffered to continue underneath, that will be the richest; while the more gradually any kind of cheese is pressed the better, although some sorts require more pressing than others. The richness of cheese depends much on the quantity of cream used, yet not entirely: no better need be made than as above directed. This cheese, when ripe, will be various, suited to different palates; for, by steeping the curd in water, the old milk produces a red mould, the new milk sound cheese; while at the junction of the two, air being admitted, blue mould will generally be formed. But as the putting curd in water renders it liable to be short, crumble, and consequently to mould, those who do not like their cheese in that state must not pursue this plan, it being, indeed, more particularly adapted for situations unfavourable to the produce of cheese.

The following method, which is more simple and easy where good cheese land, will make a mild, sounder, and rather tougher sort of cheese.—Take new milk from the cows (with an addition of cream added to it, when intended for cheese of the richest and finest quality), at which time it is generally hot enough to receive the runnet, as the cooler the milk and runnet are put together, and the slower it *comes*, the richer the curd; and when it comes it is advisable not to break the curd, but to let it settle to the bottom of the tub, carefully taking off the whey from the top. In *wheying* of cheese, a good way is, to have a sieve, with a strainer within it, laid on a pair of cheese-brigs, and a tub underneath to contain the whey. When the whey is drained from the curd, with a knife cut the curd into large pieces, that may be moved without breaking: if it be very light, and much whey still in it, put it into the sieve with the cloth or strainer in it; but if nearly drained, put it into the cheese vat, *without a cloth*, having a hoop made of tin

to slip within the vat, to keep the curd together while the whey drains from it and settles: then put the follower on the top, with a light weight upon it. When the whey ceases to run, turn the vat upside down, on a table or board, letting the curd, then formed into a cheese, slip out, having a cloth ready to put within the vat, into which the cheese must be returned, disturbing it as little as possible: that done, if the vat will not contain the curd, use the hoop; but if it will, put on the follower, which must be small enough to go within the vat: it is then ready for the press, or rather some light weight, it being very wrong, as before observed, to put a heavy weight on cheese of this sort, or to press it hastily. When the cheese has remained with the weight upon it for eight or ten hours, it should be again taken from the vat, and turned the other side or end upwards, which must be repeated every twelve hours, as this kind of cheese ought to be sixty hours in the press: during the turning it must be salted, and dried as other cheeses. Should the cheese be required to taste much of salt, sprinkle a little among the curd before it is put into the vat; but cheese of a moderate size will generally be rendered salt enough by rubbing the salt in with the hand at the time of pressing. If thought necessary, a little salt may be rubbed on the cheese on the second day after being carried to the drying-room.

The tin hoop above mentioned should be made to lap over, to suit the size of the vat used.

Cheshire Cheese.—This cheese, which is in more general use than any other, is made of the evening's milk set up, and the cream being taken from it in the morning, the whole is mixed with the morning's new milk; consequently it is composed of about one half new milk, the other of one meal or twelve hours kept: the process is as follows. To a proper quantity of the evening's

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hundred pounds weight, this operation differs much from that adopted in forming cheese of a smaller size: the curd must be put into the cheese-vat without a cloth, in the same manner as other cheeses, but it must be hotter, and well broken and squeesed, so as to force as much of the whey from it as possible, that it may become thoroughly incorporated, this cheese being very liable to fall to pieces, if great caution be not used. Some salt should be sprinkled among the curd during the working; for by salting only on the outside of so large cheeses, the salt would not penetrate to the middle of them.

When all the curd is in the vat, it will be necessary to use the tin hoop before described; then put on the follower, and place the cheese over some vessel, having a pair of cheese-brigs laid over it, to catch the whey. As soon as the whey seems to be perfectly drained from the curd, turn the cheese out of the vat, into which put a clean linen cloth, large enough, when the tin hoop is on, to inclose the whole substance of the cheese; then, with what is called a cheese-knife (made of wood, somewhat like a gardener's knife reversed), force the cloth down the sides within the hoop, and put the cheese, thus prepared, in a very heavy stone press, as all cheeses of this size require much pressing; for if they were not very firmly incorporated, both at the time they are put into the vat, and afterwards in the pressing process, they would not adhere together. If cheeses of this substance were made so rich as a good Stilton cheese, they could not be preserved; and it often happens, that when about one fourth of the cream is taken from them, they are even then too rich to bear lifting about, which sometimes occasions great loss, by their breaking in pieces while carrying to market; therefore, as large quantities of Cheshire cheese are exported, the utmost caution

should be used in not making them richer than is proper, to bear the necessary removals. The time of pressing should be, at least, sixty hours, being turned and salted as before directed in making Stilton cheese. After pressing, much salt must be well rubbed in with the hand, and the cheeses afterwards suffered to stand four days in salt, and some fresh salt used once a day while drying, during which time great attention is necessary. The best mode is, to place them on some clean wheat straw, on a chamber floor, where there is a free circulation of air, rubbing them well with a clean cloth. When the outside is dry, wipe over them carefully, in every part, with anotta mixed in a small quantity of neats-foot oil: this causes the cheese to retain its richness, and keeps it in a proper moist state, by preventing exhalation, as also the breeding of mites, for it may be observed that mites never breed in cheese until it be dry. These large cheeses must not be put one on another, whilst any humidity remains, otherwise the salt-worm or skipper will be liable to infest them. To be what is termed *ripe*, they ought to be kept a considerable time; three or four years are not too long. The reason they are so highly esteemed abroad, being in Italy even preferred to Parmesan, arises from their quality improving by age.

Different things are sometimes added, to increase the richness of cheese: butter has been used for that purpose; but, from its tendency to become rancid, and consequently to spoil the flavour of the cheese, it is very improper. I once saw four pounds of unclarified fat, in as many distinct lumps, taken out of a Cheshire cheese: though I do not think the practice of putting fat into cheese made in Cheshire is common; for I had a dairy-woman living with me in Ireland, who was bred in that county, and who declared she had never heard of such a proceeding. This woman made perhaps the

best *Cheshire* cheese ever tasted in Ireland, following the method recommended in the preceding pages: its only fault was, being too rich, though half the cream was taken from the milk. But the credulity of some persons will be staggered, when informed that there was an equal number of sheep depastured among the cows, and the milk was much richer than the woman had ever been accustomed to in Cheshire; which I am convinced was owing to the sheep, as will be hereafter clearly substantiated.

Trent-side Cheese.—This cheese is made of all new milk, and is excellent for toasting. The runnet is put to the milk when hotter than as used for the cheese before described; the whey removed as directed in making other kinds of cheese. The cheeses are formed about two or two and a half inches thick, and do not require heavy pressing, or for a long time, twenty-four hours being sufficient. They are apt to rise, heave, or blow up; but which may in most cases be prevented by adding a small quantity of sour milk or butter-milk, or by pouring some boiling hot milk or whey over the curd before it is put into the vat.

Cottenham or *Eddish Cheese.*—This is a very pleasant kind of cheese, and is made in the same manner as the preceding, but rather thinner, not more than one inch and a half thick. They must be put hotter together than many others; and, being made so thin, they are soon ready for use, two or three months being sufficient to render them fit for the table. These cheeses are also apt to rise, but in a less degree than the Trent-side, being so much thinner: the reason is obvious; they must, of course, contain less whey, which, where redundant, produces fermentation, particularly during the winter, when the moisture does not so readily exhale. At this season of the year, when this sort of cheese is

made, as there seldom is any sour milk, should the cheese rise, or blow, pursue the precautions directed in making the Trent-side.

Skim-milk Cheese.—This is a very useful and profitable article, being made from what is considered of little value in many counties. In the county of Dorset they make a most excellent cheese of their skim-milk, and a cow is calculated to afford two hundred weight in one season; which being sold at *5d.* a pound produces the sum of *4l.* 13*s.* 4*d.* for that period, while the whey supports many pigs in a very thriving state. In the county of Lincoln, also, much skim-milk cheese is made, though chiefly for family use. The method of making there adopted is very similar, where it is wanted to be mouldy, to the directions for Stilton, the cream being taken from the milk, and *no new milk added.* If it is wished to have it sound, it must be put hotter together, without any loppered milk: the milk must be made into cheese *while sweet,* from twelve to twenty-four hours old; and thus managed, is very little inferior to some new-milk cheese. However, this depends much on the land; for there are some lands from which it is almost impossible to make good cheese without loppered milk: without this addition even the Stilton cheeses would half of them blow, and run like turpentine. Indeed, some that are sold in London are of that description: where they are made, I quere whether the man who sells them knows.

The skim-milk cheeses made in Dorsetshire do not seem to have any loppered milk, or much sour milk, in them; they are put together cool, and managed very well, being frequently blue mould in from six to nine months, by which time they become excellent, though at three months the same cheese would be scarcely eatable. There is hardly any cheese, of the weight of from fourteen to twenty pounds, *of any kind,* fit for use under *from nine*

to twelve months old. The blue mould in Dorset cheese appears to be an uncertain quality, as the maker is obliged to try them to find which are in that state; but there must be a cause, and it is very evident to me that it is air, which getting in, occasions a sort of decay, as may easily be proved; for if you make holes in a sound, but rather moist, cheese, with a fork, it will readily mould and go to decay in and about the holes. These cheeses, so much admired by many, being put cool together, and lightly pressed, admit air, which, from the nature of cheese, being moist within, causes it to mould, the same as with all other things.

Some remarks and observations on the making and management of cheese to dry, being very different from the preparation of thin cheese for immediate use.—It may seem unnecessary to repeat, that great caution must be used to prevent rising; but when that happens it causes very frequently the total destruction of cheese, and always greatly injures it. By putting milk together very hot, and adding the runnet immediately, the whey will drain or separate from the curd more quickly, and most probably prevent the rising; but the cheese by this management is sure to be poor, the coat or outside smooth, and when dry as hard as horn, every part being tough. If you break the curd with the hand, and knead it into the vat, a greater portion of the whey will drain from the curd; and then the pressing of the curd very hard into the cheese-vat will in part, but not totally, prevent the rising. What is called *scalding the curd*, before being put into the vat, is another preventive: but this process injures the cheese; for the cheese made from curd so prepared, though the rising, in great part, be prevented, if not wanted for immediate use, will become principally outsides, and consequently of little value. One thing, in the pro-

cess of making cheese, is certain—the hotter it is put together, the sounder it will be; and the cooler, the richer and more apt to decay. I am, therefore, persuaded, that, to prevent the rising in cheese, one of the worst things that happen to it, there is no remedy so certain as a small quantity of loppered milk; and, although the opinion may be treated with contempt, that the very best of cheese may be made in that way. Even cheese that is made of all skim-milk, properly managed, will be often taken in preference to many other kinds made of all new-milk; an instance of which I have witnessed.—When I was on my excursion in Dorsetshire, I have been at a public ordinary, where several Dorset gentlemen farmers and travellers from London and other parts resorted, and have seen the skim-milk cheese of that county, burlesqued with the appellation of *double Dorset*, eaten by the greater part of the company, when there were both Cheshire and double Gloucester at the table. My mother made this kind of cheese in very great perfection; but the land was so improper for cheese, it could not be made without loppered milk, and consequently only in hot weather.—As a hint to those who would make the best of a dairy, she used to rear about twenty pet lambs, yeaned in April, which she brought to be satisfied with milk only once a day, and frequently half pot-liquor, by the first of June, and by the tenth they were entirely weaned. After that time she began making both the new-milk or Stilton, as before described, and the old-milk cheese; and I never knew a working-man who did not prefer this skim-milk cheese to any other for a hearty meal. This is, without doubt, the most profitable mode of managing a dairy, where there is not a ready sale for milk. The lambs so raised were, in a general way, as good as any on the farm, though reared on skim-milk.

In making cheese, I have found, from experience,

that what is termed *breaking in*, is frequently better avoided. After the milk and runnet are well mixed together, they should be suffered to remain undisturbed, and the whey carefully taken off, as breaking the curd causes too quick a separation, which renders the cheese poorer than it either would or ought to be. In making cheese not apt to rise, when the curd is taken from the whey, put it into the vat with little molestation; and small or moderate sized cheeses should have no pressure or weight upon them, but the vat should be furnished with a sliding lid, which, as the cheese declines in substance, may be put lower and lower, until the whey is perfectly drained off: there may be holes on both sides, or more properly in the lid and bottom of the vat, for the convenience of turning. This vat or box needs no cloth; indeed, it is much better without, as the cloth would only impede the draining of the whey.—The rising of cheese is not from any fault in the cows; it is occasioned either by the nature of the land, or the causes before mentioned; but by having a proper idea how to prevent it, much useful cheese may be made even from land unfavourable for the purpose.

Using water to render the milk of a proper heat to receive the runnet.—In most cases, this is a better method than heating the milk, which is apt to burn, and set to the bottom of the pot; when that happens, it will spoil the cheese, giving it a burnt taste.

Colouring Cheese.—Colouring for cheese may be made of almost any colour, but yellow is generally preferred; it is produced from anotta, of which the Spanish is by far the best, much being made in England: the price of the former is considerably the highest, though, in the end, it is the cheapest, as so little of it effects the purpose. Some people have objected to colouring butter or cheese, but this prejudice appears to be over, as

almost every kind of cheese has this colouring now applied to it, Stilton excepted.

Marigolds will afford a yellow colour: they are boiled in milk, which is added to the cheese milk. This colouring is both pleasant and wholesome.

Carrots are also used for yellow, scraped and boiled in milk: they are then strained, and the milk mixed with that intended for the cheese.

Sage imparts a green colour to cheese, and its taste is much liked by many persons.

Nettle-juice is likewise sometimes used in cheese, to give a green colour.

Drying Cheese.—All kinds of small and moderate sized cheese are dried on boards, which should be kept very clean, by frequent washing with boiling water, and being then wiped with dry cloths. Lime is very serviceable in scouring, to correct the fœtid effluvia which the whey and juices that run from cheese readily emit; on which account it becomes necessary to turn cheeses twice daily, in hot weather, for the first two or three days, and, with a clean dry cloth, to wipe both the cheese and the board. Care ought to be taken not to dry it either too quickly or too slow: if rapidly dried, the cheese will crack, and a sort of putrefaction forming in the interstices, flies of various kinds will deposit their blow, and it will be very difficult to keep it sweet. After cheese is become dry enough for the rack, it should still be kept in a medium state, neither wet nor dry. Where there is an opportunity of preserving cheese in a barley-mow or stack, that mode is preferable; but care must be taken that cheeses are thoroughly dry before they are put into the mow, or they will rot: and it is advisable previously to wash them in boiling whey, to destroy the mites that are then upon them, or in embrio; after which they must be made perfectly dry again, and put in the middle of the stack

or mow, so as to be secure from rats and mice. Great regard must be paid to placing them on their edge, and that they do not touch each other. This method saves much trouble in ordering the cheese, preserves it from mites, rats, and mice, and renders it in the highest degree mellow and grateful to the taste.

To preserve Cheese.—Cheshire cheese is preserved by means of anotta and neats-foot oil, as before described. The same is, by some persons, preferred for Gloucester cheese; others use red saunders, though ammoniac is most commonly applied, after the cheese has been carefully oiled. But either of these applications is a better protection against the mites than against the ravages of the skipper or salt-worm. If cheese be made rich, it is very liable to be spoiled by this insect, which, in summer, frequently breeds in cheese before it becomes dry, and quickly destroys it. In the winter, likewise, salt-worms are sometimes found in cheese, if kept in a warm place; but at that season of the year do very little mischief, and are even eaten as a dainty.

Runnet, in general use.—Take the chess-lop of a calf, the food of which has been milk only, and which was slaughtered before digestion was perfected; open it, wash the skin very clean, throwing the curd away; then salt it as well as possible, extend it every way by skewers or pieces of wood, and hang it up in some dry place. It ought to hang drying one month at least; but if in a dry situation, twelve months will not injure it. The night before you intend to make cheese, take a piece of the skin, of about one inch or an inch and a half square, according to the size of the cheese intended, put it in a small pot, with half a pint of clean spring water, and a large tablespoonful of salt; and when you have prepared the milk, add the liquor to it, and stir all well together.

Runnet, not in general use.—Take the chess-bag of a

calf, of about six weeks old is considered the best, and having opened the bag, pour out the curd only into a clean vessel, pick it clean from dirt, and wash it in several waters, until it is white; when perfectly freed from all filth, lay it on a cloth, that the water may drain from it, then put it into a clean vessel, and rub it well over with a handful of salt: having washed the bag repeatedly, till thoroughly cleansed, salt it both inside and out, then put the curd into it, and the whole into a pot or pan, tying a piece of bladder over it, to prevent the access of air; and if thus kept a year before using it will be the better, as new runnet is said to render the cheese heavy, and sometimes hollow.

When the earning is fit for use, open the bag, and turn the curd into a stone mortar or bowl, and with a wooden pestle, or rolling-pin, beat it much; put to it the yolks of two or three eggs, and half a pint of thick, sweet cream, with a small piece of saffron well dried and beaten to a fine powder; add a few cloves and a little mace, then stir the whole thoroughly together, until perfectly incorporated, and return it into the bag. Make a strong brine of salt and water, boil it with a handful of sassafras, and when it is cold, clear it into a clean earthen vessel; then take from the bag four spoonsful of the curd, and mix it with the brine: keep the runnet a fortnight before it is used.—This quantity, the earning being quick and sharp, will be sufficient for twelve gallons of milk.

Preparation of anotta for use.—Take a piece about the size of a hazel nut, put it into a pint of milk the night before you intend to make cheese, and it will dissolve: add it to the milk at the time the runnet is put in. This will be colouring enough for a cheese of 20lb weight.

Butter may be coloured in the same manner as cheese.

Having thus given general directions for the making and ordering of cheeses intended to be dried, and of as many kinds as are necessary—the Gloucester, Derbyshire, &c. being all made by nearly the same process—I will describe the method of making cheese to be eaten new, or without drying.

Slip-coat cheese—is made of new milk, with the proportion of one third of warm water and a small quantity of earning put to it: let it be covered up with a clean linen cloth. Be very careful in taking off the whey not to break the curd: then remove the curd gently out of the tub, and lay it on a cloth spread over the cheese vat. About half an inch is quite as thick as this cheese ought to be made; for if it be thicker, the outside will spoil before the inside is changed from curd. It requires but very light pressing, and for a short time, from eight to twelve hours being sufficient. When taken out of the vat, it must be placed in a warm situation (the management being in every thing different from that of cheese intended for keeping), even in the hot sun is not improper, but in that case it must be covered with wet cloths, or, which is better, put between two pewter plates, laid on dock or sycamore leaves, and covered with the same. This cheese, when properly managed, is ready for use in six days, and will run like cream.

York or real Cream Cheese.—This cheese is very little known, or in use, but in York and the environs; nor is it sold there in its true state. There is no soft cheese equal to it, and it is only to be found genuine in private families. The making of a real York cheese is a very simple process, being only thick sweet cream dried, without any mixture whatever. Take the cream from the milk when it has stood in some cool place twelve hours, and put it into a cheese vat of about one inch or an inch and a quarter in depth, twelve inches long, and

half that in breadth, having holes in the bottom to discharge the small quantity of moisture that may whey from the cream: some rushes must be sewed together to fit the bottom, one side, and the top, so that it may be turned from one side to the other. Cheese thus made is kept in the rushes, and sent from York to London, or elsewhere, in boxes in a very perfect state. The cheese which is usually sold for York cheese, is composed of new milk and cream made into curd; which, though very good, is not nearly equal to the genuine *York cheese:* it is not unlike the Bath cheeses, though much superior.

SECTION XIII.

Expenses and Profits of Cow-keeping.

(Bearing date February 12, 1809, in London.)

THE profits of a cow being frequently stated, without adding the expenses, for the better information of the reader I will give a debtor and creditor account, drawn from the register of an old cow-keeper (Mr. Kendal), who followed the business more than thirty years, being his sole employ: but having for some time found it a losing trade, he has now sold out; the reason given is, that all the articles consumed in keeping cows have advanced in a greater proportion than the milk, which will clearly appear by the following statement.

This estimate is given on twenty cows, as a greater number would only multiply the figures, while a less cannot properly be taken, as there are, on an average, two in that number lost annually, from some misfortune or other—in calving, by decay of constitution, from the mode of keeping in hot-houses, kind of food given, &c. —producing little more than the value of horse-flesh.

Stock bought in.	L.	s.	d.
Twenty cows, at 23*l.* each	460	0	0
Two horses, at 15*l.* each	30	0	0
One cart	27	0	0
Horse harness, 5*l.* each, whip 10*s.* . . .	10	10	0
Total . L.	527	10	0

An increased Stock will be wanted within the year.

	L.	s.	d.
Six cows, at 23*l.* each	138	0	0
First capital	527	10	0
The whole capital wanted to carry on the business . . . . . L.	665	10	0

Cow-keeper's Process, Attendance, and all other matters, one whole year.

EXPENSE.	L.	s.	d.
Twenty cows, twelve bushels of brewer's grains, at 3*s.* 6*d.* a quarter, each cow, cost 5*s.* 3*d.* a week, for forty weeks . .	210	0	0
Twenty cows, hay (the load 6*l.* 10*s.*) 3 cwt. 5 stone each for one week, 7*s.* 3*d.* for forty weeks	290	0	0
Twenty cows, twelve weeks at grass, at 3*s.* 6*d.* per week	42	0	0
Two men's attendance, at 30*s.* per week, fifty-two weeks	78	0	0
Lamp oil 3*l.*, wheeler's bill 3*l.*, horses shoeing 4*l.*	10	0	0
Baskets, four at 3*s.* each, 12*s.*; shovels, two at 3*s.* 9*d.* each, 7*s.* 6*d.*	0	19	6
Pails, four at 3*s.* 6*d.*; brooms, two dozen at 4*s.* per dozen	1	2	0
Loss in exchanging cows to keep up stock .	50	0	0

	L.	s.	d.
Brought forward	682	1	6
Cow-stand, 5*l.*; stalls, 20*s.* each, 20*l.* . .	25	0	0
Two horses' keep, 14*s.* a week each, fifty-two weeks	72	16	0
House-rent and taxes, assessments, &c. . .	20	0	0
Horse harness repair, 15*s.* each, duty 12*s.* each	2	14	0
Twenty cows bulling, 2*s.* each, 40*s.*; doctor's bill 20*s.*	3	0	0
Interest on 527*l.* 10*s.*, at 5*l.* per cent . .	26	7	6
Brewer's men, throwing out grains . . .	3	2	0
Total . L.	835	1	0

PRODUCE.

Twenty cows' milk, at seven quarts a day, 23,520 quarts, or 2,940 gallons (eight quarts to the gallon), at 2*s.* 2*d.* per gallon, this for twenty-four weeks	318	10	0
Twenty cows' milk, at seven quarts a day, for twenty-eight weeks, 27,440 quarts, or 3,430 gallons, at 2*s.* per gallon (eight quarts to the gallon)	343	0	0
Twenty calves, at 20*s.* each	20	0	0
Dung, twenty loads, at 2*s.* per load . . .	2	0	0
Loss	151	11	0
(Note.—The brewers' men are paid by the nail, of twenty-five quarters, 1*s.* or thereabouts; the whole quantity consumed 1500 quarters, which is sixty-two nails.)			
Total . L.	835	1	0

Thus there is a loss of 155*l.* 11*s.* yearly, on a fair calculation, nothing being exaggerated, excepting that

the hay may be thought too high; on the contrary, many expenses will occur, that are not in the estimate, such as giving the dealers liquor at the time of payment, men delivering hay, &c. while the loss of 50*l.* in keeping up the stock of cows to supply the dealers with their regular quantity of milk is underrated.

If a stock of twenty cows were bought, milked six months, and it were necessary to sell them at the end of that time, they would produce little more than half of the first cost: but then there are supposed to be twenty calves to sell likewise, though it seldom or ever happens there is that number living. Now, if the cow-keeper do not lose the sum stated, as he, by having a farm even at the high price of 7*l.* 4*s.* an acre, may grow his hay somewhat cheaper, and at grass keep his cattle to a small advantage; nevertheless, as he can sell his hay at the price mentioned, it will pay him better than giving it to cows, while at grass he can take in stock to pasture at the charge allowed, being altogether much more beneficial than cow-keeping. And where turnips are given, though they keep the cows up to their milk, they will not increase the quantity stated; for it must be by extraordinary good management that the whole stock of cows average seven quarts a day, one cow with another, as the times of milking are at very unequal periods, for the convenience of the dealers, which is extremely injurious to the cows. Turnips promote the health of the cows; but potatoes, when given alone, and in large quantities, have a contrary effect, nor is the milk so good as is produced by most other kinds of food: they are best mixed in about equal proportions; in that way potatoes may be used with no seeming mischief: though neither turnips nor potatoes pay the expense in milk. They keep up the flesh of the cows, and render some of them fit for the shambles that otherwise would not become so with dif-

ferent feed. The profitable way to keep cows is to feed them well; but if it were always possible to buy them fat, and keep them in that state, so that when the prime of their milk was taken they might be fit for sale as beef, that would be the most advantageous, and go the furthest towards keeping the money together, and consequently preserving the stock. But where twenty cows are bought with the greatest caution and judgment, there will seldom be more than five or six out of them that will make fat beasts, giving milk at the same time. And it must be recollected, that when a cow-keeper agrees with a dealer to supply him with a load of milk on a certain day, considering himself bound to perform his contract, and some of his cows having died, or fallen off in their milk, he is obliged to go to market to purchase: when he gets there, he cannot find a single cow of the description he wishes to buy, and is therefore compelled to purchase an unprofitable kind;—as a cow with a calf will generally fetch more money, by two or three pounds in twenty, than she would in a moderately fat state; while if she prove fat, she, on the average, will lose from two to three pounds of her first cost; and if she be offered to sale, with a calf, there is no London cow-keeper would buy what is called a *town-end* cow, that has been fed on grains, as they know from experience there is a decay in her constitution. Turnips are given as a preservative, otherwise they are a loss; and potatoes still more so, as they are always higher than turnips: turnips are never to be bought under 10*l.* an acre, the produce being about twelve tons; or the crop increases in value according to the weight produced. This price is commonly given within the distance of from one to five miles; but turnips are fetched by the cow-keepers twenty miles, in which case the price is less per acre, but the charge for cartage

brings the expense to nearly the same: the expense of pulling is about 10*s.* an acre, and the carting home, with a cart and three horses, estimated to bring three tons, is 20*s.* each load. The following, then, would be the expense on an acre of turnips:

	L.	*s.*	*d.*
One acre on the ground	10	0	0
Pulling	0	10	0
Carting	4	0	0
L.	14	10	0

The cart-load is estimated at eighty baskets, of one bushel each, tops, roots, and all; and it is the practice to give to each cow one basket daily; which, being at near 11*d.* a bushel, is 6*s.* 5*d.* a week: an acre is about 320 feeds. Potatoes, at the lowest, are 3*l.* 10*s.* a ton; a bushel of them weighs 60lb, and 1 cwt. is 120lb: the customary feed for a cow daily is 30lb, which, at the present price, is 1*s.* 9*d.*: it is the general opinion of all cow-keepers, that a larger quantity, given for any length of time, is likely to be injurious.

I heard a man of veracity say, in Smithfield market, that he knew an instance of a Manchester cow-keeper being allowed 1000*l.* a year, by a dealer in milk, for the produce of twenty cows, to be in their prime, and the milk to be of the very best kind. This sounded great; but as there must have been at least two sets of cows, it does not appear to be an exorbitant price, when the business is brought to account, as every article of food is dearer in Manchester than in London; and the expense of keeping twenty cows being 835*l.*, if we add the purchase of another set, which would be 100*l.* more, the cow-keeper would be no great gainer.

Now, it is very natural for the reader to say, 'There has been much money gained by cow-keeping:' so there

has, and the reason why it is not so profitable now is obvious. Thirty years ago, a stock of the best cows, on an average, was bought in at 7*l.* 10*s.* a cow, with the calf; the same cow, when fat, sold for 10*l.*: therefore, admitting the same misfortunes, by decay in constitution, calving, &c. a moderate sum of money would keep up the stock, with some gain: whereas from 50*l.* to 80*l.* is now required yearly on every twenty cows, to preserve the number; while a further loss arises from the milch cow obtaining a higher price than the fat cow. At that time, land was at per acre from 40*s.* to 50*s.* a year, porter grains were 1*s.* a quarter, hay from 48*s.* to 50*s.* the load, and all other articles low in proportion; (potatoes, not above seven years since, were at from 20*s.* to 30*s.* a ton): milk was then sold at 1*s.* a gallon for ten months in the year, and for three months at 14*d.* a gallon. Milk now sells at about double the price, but cows and every article connected with the business of cow-keeping are advanced to three times their cost at that period. The probable loss in twenty cows being two, that would then be but 15*l.*, now it would be 46*l.*; which alone is a sufficient cause for the cow-keeper turning his capital into other channels. But the following account will exhibit at one view the profit and loss on twenty cows at the former period:

Expense per year.	*L.*	*s.*	*d.*
Disbursements, the third part of 835*l.* 1*s.* are	278	7	0
Profit	60	18	0
Total . *L.*	339	5	0

Produce.			
Receipts 678*l.* 10*s.*, the half is	339	5	0
Total . *L.*	339	5	0

This was a fair profit, as one hundred cows would produce 304*l.* 10*s.* annually, while all the necessaries of life were at not more than half the present price.

Various experiments have been made, to discover a cheaper food than grains, particularly with lintseed oil and wheat bran. A particular trial was made at Blackheath, by a man who had gained a sum of money as a milk-dealer in London, with oil, &c. but it proved an unprofitable speculation; and, after wasting his money, he is returned to town to follow his former business. I particularise this circumstance, as I have observed it recorded by some author in commendation of the practice. It is rather extraordinary that the application of lintseed oil as food, as it must be allowed to be the essence of the seed, should not, as said by some who have tried it, answer expectation; but it is of a dry hot nature: while the refuse of the seed is found, when made into cake, to be very fattening: and it may be observed that the cake, similar to the seed, when put into water, will produce a thick viscous liquor, or sort of jelly, whereas the oil will not assimilate with water. Potatoes, when cheap, have been given plentifully, but they prove bad food, occasioning ulcers in the lungs. Nothing yet tried is so good and cheap for milch cows as grains and hay: distiller's grains are the best; but there is only a small quantity to be had. Distiller's wash is excellent for fattening beasts, but not proper for cows, as it will occasion decay in their constitution.

By way of comparison, I will give the dealer's profit when he keeps his own cows. Supposing twenty cows to be kept by two of those men, the account will be as follows:

Expense.	*L.*	*s.*	*d.*
Twenty cows, supposing the cost the same as to the cow-keeper	835	1	0
Profit	186	19	0
Total .	*L.* 1,022	0	0

Produce.	*L.*	*s.*	*d.*
Twenty cows' milk, seven quarts a day each cow for fifty-two weeks, 51,100 quarts, at 4*d.* a quart	851	13	4
Water, one fifth, 10,220 quarts, at 4*d.* per quart	170	6	8
Total . *L.*	1,022	0	0

From this last statement it appears, that the man who keeps cows, and retails his own milk, may supply the public with that beverage at the present price, and gain a sufficient profit to maintain himself; though not adequate to the support of cow-keeper and dealer in separate establishments: consequently, without a great advance in the price of milk, the latter must be the man to serve the metropolis with that article. But it may be seen whence the chief of his profit arises, as, in 186*l.* 19*s.* there is 170*l.* 6*s.* 8*d.* water; and, although the public may condemn the practice, it must be so unless a better price were given. The quantity of water stated is about the average, some putting in more, others less; but the regular proportion is one fifth: this I have learned from several of the oldest dealers; and during the time I kept cows I frequently saw them mix it, some of them using a little coarse sugar, to give it a yellower colour. Now, the profit of twenty cows divided between two men, will be 92*l.* 1*s.* 6*d.* each, to which may be added other advantages, such as doing the work themselves, with the assistance of their own families, and being kept constantly employed, while the milk-dealer who buys his milk is sacrificing both his time and money in a public-house, which makes all the difference to him between earning and spending.

Another trial was made by keeping cows on lintseed cake dissolved in water, and mixed up with wheat bran,

chaff from oat-straw, clover hay, and meadow hay: the chaff from meadow hay proved the best. This was very good food; the cows both milked and fattened; but too expensive—it would not pay. A trial was also made with distiller's grains, mixed up with chaff, chopped from clover hay, meadow hay, and rowin: the rowin chaff was the best. This mixture should lie from twelve to eighteen hours before being used, to heat. It is a most excellent food, the best and cheapest I ever tried; the cows both milked and fattened incomparably well. The account as follows:

Winter Expense, one week.	L.	s.	d.
Twenty cows, eighteen quarters of distiller's grains, at 7*s.* a quarter	6	6	0
A load of hay, 18 cwt.	3	15	0
One week's charges, taken from the first account	5	12	9¼
Profit	17	13	6¾
Total . *L.*	33	7	4

Produce, one week.			
Twenty cows, twenty quarts 1½ pint a day each cow, which was 415 quarts, or nearly fifty-two gallons, daily, at 1*s.* 10*d.* a gallon .	33	7	4
Total . *L.*	33	7	4

Now, the keep of these cows for one week, on rowin hay and distiller's grains, was but 10*s.* 0½*d.*; chopping the hay and mixing the grains being a great advantage: but, by Mr. Kendal's account, it appears that the cows kept on brewer's grains, and meadow hay, the first crop, cost for one week 12*s.* 6*d.* The difference arises in two ways:—the grains from the distillers are all measured by

the bushel basket to the buyer; while the brewer's grains are delivered out from the measure of the malt put in, consequently not more than six bushels to the quarter: and distiller's grains are composed one half from buck wheat or barley meal, which forms a kind of paste. The hay is stated by Mr. K. at 6*l.* 10*s.* a ton, in this at 3*l.* 15*s.*; therefore the difference arises chiefly from the price of hay; and shews the great loss the cow-keeper sustains in his profits during dry seasons, as, unlike many other trades, he cannot regulate his charges by circumstances. Another experiment was tried by keeping sixteen cows in summer on green food—grass, mown twice, clover, and tares—and about half the usual quantity of grains given in winter: the consumption and expense were as under:

From May 10th to September 10th, just sixteen weeks.

	Acres.	CONSUMPTION.	*L.*	*s.*	*d.*
Grass	3	at 12*l.* 12*s.* an acre	37	16	0
Tares	3	at 8*l.*	24	0	0
Clover	3	at 8*l.*	24	0	0
Tares	2	at 10*l.*	20	0	0
Total	11	Total .	*L.* 105	16	0

EXPENSE.

One week's pasture, at 4*s.* per week, twenty-nine cows (fifteen at one time, and fourteen at another)	5	16	0
Two loads of hay	9	16	0
Grains, eight quarters, thirteen weeks . .	36	8	0
Green food, sixteen weeks, at 10*s.* 2*d.* a week	105	14	0
Attendance, and all other expenses, 5*l.* 12*s.* 9½*d.* a week, thirteen weeks . .	73	6	0½
Total expense of sixteen cows for thirteen weeks . . .	*L.* 231	0	0½

Now, the expense of keeping sixteen cows for thirteen weeks was about 14*l.* 8*s.* 10½*d.* per week, or 18*s.* 0½*d.* each cow; which proves this to be the dearest food given. The mown food comes to 10*s.* 2*d.* a week each cow; add the grains, 3*s.* 4½*d.* each week, and the hay chopped into chaff to mix up with the grains, 13½*d.* a week, the account will then stand thus:

	s.	*d.*		*s.*	*d.*
Tares, one week, each cow . .	10	2	Cows at pasture, 4*s.* per week, each cow . .	4	0
Grains, do. do. .	3	4½	Grains, one week, each cow . .	3	4½
Hay, do. do. . . .	1	1¼	Hay, do. do. . .	1	1¼
Total for food .	14	7¾	Total for food .	8	5¾

Different methods of keeping Cows brought into one view.

	s.	*d.*		*qts.*	*pts.*
The general practice in winter, each week .	12	6	Produce in milk daily . . .	7	0
Do. in summer, do.	3	6	Do.	7	0
My own method in winter, do .	10	0½	Do.	20	1½
Do. mown food, in summer, do.	14	7¾	Do.	17	1
Do. at pasture, do.	8	5¾	Do.	17	1

As the unusual quantity of milk given by my cows may stagger some readers, I will, to substantiate the fact, and to shew that I do not speak by guess, mention the names

of the persons who bought it, with their respective proportions annexed.

	Gallons, 8 quarts each gallon.
John Elderidge	10
Mark Saunders	8
Thomas Nash	6
Mary Turnbull	6
John Turner	8
J. Hipkiss	4
John Roland	8
M. Price	2
Winter months' total	52

This was the produce of twenty cows;—there were twenty-three kept part of the time, but never more than twenty in milk;—and they continued to give this quantity, and frequently more, by sometimes from four to six quarts a day. It so much amazed the dealers, that they mutinied, openly telling me I had a method of increasing the quantity by some drug or mixture; and they had formed a determination to leave me, which one dealer actually did. This was about the latter end of February, when four cows were sold fat out of the number; after which time I had no regular set till the May following. Dissatisfaction was created, and the idea formed, partly from my keeping milkers to milk my cows, which is not the practice with the London cow-keepers; it being usual for each dealer to milk for himself, having a certain number of cows set apart for that purpose. But, from my own experience, I had learnt that there is an art in milking, some milkers drawing the milk much easier from the cow than others, to whom she will give more,

and hold to it much longer, not going dry so soon, or so long a time before calving. I had been informed of another thing by an old dealer, namely, that most of the dealers are trickish, leaving milk in the udder if they happen to have a slack sale, and sometimes in the morning to have more in the evening. Add to which, their milking at irregular hours, is highly injurious to cows; as they should always be fed to a minute, and milked at the same time, for when they are feeding they give their milk more freely; indeed, while their jaws are moving, they cannot hold their milk. After the best care, there were but five cows made themselves fat shambles beef out of the twenty, first laid in, three of which were good beef at Michaelmas, the other two in high condition.—It is proper to sell cows fed on grains while the weather is cold, as the fat does not set like beef fed on some other kinds of food.

I will add the quantity of milk given by fifteen cows, from the 10th of May to the 10th of September. Sixteen cows were kept, but there were never more than fifteen in milk. This quantity is not so large as that in the winter; but as it is a very uncommon proportion, the dealers' names, with the number of gallons each took, will confirm the statement.

Names.	Gallons, 8 quarts each gallon.
Elingborough	9
Nash	6
Turnbull	6
Roland	6
Hipkiss	4
Price	2
Total gallons	33

Produce.	L.	s.	d.
Thirty-three gallons, at 1s. 10d. a gallon, for one week, or seven days	21	3	6
Total . L.	21	3	6

Expense for tares, &c.	L.	s.	d.
Sixteen cows, at 18s. 0½d. each cow per week	14	8	8
Attendance .	5	12	9¼
Profit . . .	1	2	0¾
Total . L.	21	3	6

Expense.	L.	s.	d.
Charge for sixteen cows at pasture, 4s. a week each .	3	4	0
Grains, 4s. 5¾d.; attendance, 5l. 12s. 9¼d. .	5	17	3
Profit . . .	12	2	3
Total . L.	21	3	6

Produce.	L.	s.	d.
The same as before	21	3	6

The extraordinary quantity of milk given by these cows must partly arise from the choice of them, and the method of keep, which seems to vary from the cow-keepers' practice only in mixing up the grains with the sweetest and best rowin hay—if a little heated in the stack, so as to be rather brown, the better, which may be known by the feel being somewhat clammy. The distillers' grains being like paste, when the mixture lies for about twelve hours, it acquires the heat of grains from the mash-tub; and the hay, which gives the whole a smell like new-made hay, being chopped about an inch and a half long, obliges the cows to chew and masticate their

food in a proper manner. I observed, when they went out in the day-time, that if by chance they had had a feed of grains given to them not mixed up with hay, the poultry scratched in the dung, but never after giving the mixture: this clearly shews that the cows had got all the goodness from it. The following circumstance strengthens my opinion of the practice being beneficial: I bought two cows of a dealer, who had kept them on brewer's grains, turnips, and meadow hay, which, when brought to my food and methods, in fourteen days doubled their quantity of milk, though he had milked them himself: and if it had not been for his seeing every thing fair, I have reason to believe that all the dealers would have left me, and I should not have sold my milk at all, notwithstanding they all allowed the milk to be better than they got at other cow-houses; and they say the same to this time. The additional expense of preparing the food in this way would be one man more to every twenty cows, which would be about 15*s.* a week.

It will be observed, in all the experiments tried in keeping cows in the summer, that pasture grass is the cheapest, and the mown food the dearest; while there is an extra expense, in mowing and carting, which has not been noticed. The grass at 12*l.* 12*s.* an acre was cheaper, by being mown twice, and proved more fattening, than the tares and clover at 8*l.* an acre; as an acre of the grass fed the cows a longer time by more than one third. What led me to try this method of keeping cows was, that grass land not being to be obtained under twelve guineas an acre, and finding the cow-keepers on Mary-la-bonne park gave, for farms together, from 7*l.* 4*s.* to seven guineas an acre, I thought that tares and clover, one mowing, at 8*l.* an acre, must be cheaper than taking grass land at those prices, supposing an acre of tares or clover, from its bulk, would keep more cows

than an acre of grass. But it proved, on trial, to the contrary; and the tares, which I bought at 10*l.* an acre, kept the cows a shorter time than those bought at 8*l.* an acre, although there appeared nearly double the bulk on the ground, there was so much waste by the bottom part being yellow and in a putrid state; and if they lie any time on a heap, much of the green or top part will spoil: from this, and other similar observations, it appears that tares should be sown much thicker, to support each other, which would cause them to grow more rapidly, and at the same time be shorter; for when they grow long and large, they all get a bad smell, and there is much waste.

In the summer's experiments there was considerable loss, notwithstanding the great quantity of milk produced; as in the sixteen weeks the keep cost, with the attendance, nearly as much as the milk was sold for; and there was one cow which cost 25*l.* went into a decline, and was sold for only 2*l.* 12*s.* 6*d.*; while the cow-doctor's bill was 30*s.* 5*d.*: therefore, putting the loss of the cow and her expenses together, if we add the profit, 21*s.* 10½*d.* it appears there was a loss of 22*l.* 16*s.* 0½*d.* during the time these cows were kept on green food; which shews plainly that stall feeding will not pay at the market price in London and the vicinity. I thought this food would prove more healthful; though, from this cow's decline, it seems to make no difference, as she was before, to all appearance, like the rest of the cows, in good health, and gave milk in the same proportion: I was bid 20*l.* for her in May, at the very time the cows were put to this food. But this cow had been put to grains at three years old, and kept on them for three years; it is probable, therefore, her constitution was exhausted, and in a regular decline, before she was put to this food: the first symptom was a bleeding at the nose.

I have conversed with graziers in Smithfield market,

who say they have bought grain-fed cows to put to grass, but that it is seldom or ever they will fatten, although when they buy them they appear in thriving condition. This information has induced me to converse with the slaughter-men, who give a very sufficient reason for their decay; as they say, the inside of the stomach is gone, worn very thin, and the liver, lights, or kidneys, frequently ulcerated: but this not only in cattle that have been fed on grains, as there is often the same appearance in some other stall-fed cattle, particularly from lint-seed cake. It seems, from the slaughter-men's account, that all those kinds of food, although they are fattening, are of too forcing and hot a nature to be continued with safety for any length of time; and that there is nothing so healthful for cattle as pasture grass, with hay, where it can be obtained, and cool situations.

Divers opinions have been held on the subject of stall-feeding, as to the health and constitution of animals; though my curiosity and doubts are fully satisfied on that head. It may occasionally happen, that some animals, kept confined, warm, and in dark places, may fatten quicker for a short period: but as to the preservation of health, a comparison may be drawn between the ploughman and the mechanic. I am satisfied, from my own experience, that if a calf were continually kept in a warm house, and never to enjoy the open air, it would not live to the age that nature has intended. My father had a milch cow that lived to the age of thirty-one years, and made a good fat beast at last; but not by *stall-feeding*: for, as I have elsewhere observed, that practice was not known to my father. The reason this cow was kept to so great an age arose from its having recovered from the pestilential distemper incident to cattle; and, as they are never known to have it a second time (somewhat similar to the small-pox among the human species), cows

that had got over it were considered, at that time, so valuable, they were kept till very old, as the breeders were constantly in fear of a recurrence of the calamity.

The business of a cow-keeper is expensive, and very precarious. For instance, if he lay in a sufficient stock of cows, say twenty, and agree with dealers to serve them with a certain load of milk; by an extraordinary good choice in cows, and the greatest attention in management, he may keep up the quantity for six months: but before the year is out he will want, at the least, one third more, which will require another advance of capital; suppose six cows, at 23*l.* each, it would be 138*l.* the interest of which would be about 2*s.* 8*d.* a week; and the expenses will consequently be increased in the same proportion, or about 40*s.* a week; an additional hand will also be necessary: in all 2*l.* 2*s.* 8*d.* more than has been brought to account. In the first three or six months the profit seems to be great; but it keeps progressively lowering for some, and even a long, time; as, from the nature of the business, the best cows get fat, and are sold, while the worst-constitutioned ones remain on hand; and were they to be offered for sale, their condition is so readily seen, and so well known in the market, purchasers are not easily found, as none will buy them to keep; and to kill, at 2½*d.* a pound, or 3*d.* at the highest, they produce little money: the general price of those cows that are sold for *cag-mag* is from 50*s.* to 5*l.* The cow-keeper is unwilling to suffer such a loss, and he keeps calving them in, until at length he has many of the kind; and they go off at the price above stated, when from three to five years old, as there are few instances of cows standing the sort of keep usually given more than five years to be healthful. I have myself experienced, in the sale and exchange of cows to keep up a stock of twenty for one year, a loss of 66*l.* 5*s.* 6*d.*; together with the cow

before mentioned, which would have died in a few days, about 21*l.*; in all 87*l.* 5*s.* 6*d.*: this serves to corroborate the general calculation given by the cow-keeper.

On comparing the loss on the several cows, there seems to be little difference between the low-priced cows and those of a high price:—a cow that was old, and very poor, but from the country, cost only 12*l.* 12*s.* the calf fetched 30*s.* and she sold out again at 13*l.* milking very well; now this cow paid 1*l.* 18*s.*: while another cow, bought at 24*l.* 3*s.* the calf selling for 28*s.* was sold out at 22*l.* and milked very well; this cow lost 5*s.* Many of my cows produced about the same money they cost; the most that any one lost was 3*l.*: the great loss above alluded to, principally arose from selling the stock entirely off. But the time I kept cows, being only one year and a half, was not a fair trial of the loss sustained by upholding a stock.

My method of managing cows was, to keep them on the best of every thing that could be obtained, while every attention that could be thought of was paid to them: which certainly answers the best for the time present. But cows kept so high, if they do not get fat, and are calved in again, ought to be sold, sell for what they will, and fresh ones bought; as every cow that had been so kept, gave much less milk the second year than the first. One particular cow increased, from her first buying in, from twelve to eighteen quarts a day, and we could not get her dry for calving: when she calved she gave no milk, but a sort of blue whey; and I kept her three months, letting the calf suck, thinking it would bring her to milk, but that did not happen; she was then sent to market, and sold for eighteen guineas, the very price she cost. By this proceeding much money was lost—about eighteen weeks' keep, from the time she left off milking till the time she was sold. I merely mention

this as a proof that keeping milch cows extremely high, does not add to their future health; it is more than their constitution will bear. Cows kept in this high state are remarkably tender; and their udders, by being strained, are so much distended, that, when lying on the bricks without litter, they get bruised; and the cows sometimes tread one on another. I had three cows lost each a pap by such accidents; and one by a wart at the end of her pap, which grew so that the milk could not be forced out, and we were obliged, in consequence, to cut it off; which operation was performed so close to the root, that the milk afterwards ran from that pap spontaneously, and was entirely lost, till the pap became dry. I mention this circumstance to warn the reader, if he happen to have a cow with such an excrescence, to be careful in not cutting off the pap end.

I have in another part of this work mentioned, and rather recommended, keeping cows on wheat bran, lintseed cake, bean-meal, hay chopped into chaff, and hay unchopped, as they milked well on this food; I will, therefore, here give a calculation of the expense as it stood in the years 1804 and 1809 respectively, viz.

1804, May. *Expense of keeping a Cow one week.*

	s.	*d.*
Wheat bran, 10*s.* a quarter, three bushels, at 7½*d.* per bushel	1	10½
Lintseed cake, twelve guineas a thousand, three and a half cakes, at 3½*d.* each cake	0	11½
Bean-meal, at 30*s.* a quarter, one peck . . .	0	11½
Hay, at 4*l.* 10*s.* a load, two trusses, at 2*s.* 6*d.* each truss	5	0
Total . . .	8	9

1809. February. *Expense of keeping a Cow one week.*

	s.	*d.*
Wheat bran, 19*s.* a quarter, three bushels, at 14½*d.* a bushel	3	8½
Lintseed cake, at sixteen guineas a thousand, three and a half cakes, 4½*d.* each cake . . .	1	3½
Bean-meal, at 40*s.* a quarter, one peck . . .	1	3
Hay, at 6*l.* 10*s.* a load, two trusses, at about 3*s.* 7*d.* each truss	7	2
N.B. Bran is sold sixteen bushels to the quarter.		
Total . .	13	5½

From these calculations it appears, that every article in cow-keeping has advanced considerably, even during the last five years, so as to lower the profits agreeably to the statement given by the old cow-keeper, and consequently to render the business much less beneficial than it was at the former period; the keep of a cow being now 4*s.* 8½*d.* a week, which is 12*l.* 4*s.* 6*d.* a year, higher than it was in the year 1804.

After having taken the cow-keeper's calculations, and drawn up the preceding account, I introduced it at the Board of Agriculture, to the secretary and some other gentlemen; when their opinion was, that the quantity of milk said to be produced was too small. I therefore went again to the cow-keeper, and he assured me the calculations were quite high enough, giving some further reasons to substantiate the fact. He observed, that where there is a great number of cows together, suppose one hundred and upwards, there is commonly one bull kept for every thirty cows, which expense has not been taken into the account, while the bulls do not pay so

much for what they consume: that, in so large a number of cows, there are some continually in season, causing many others to be uneasy, and to push one at another; which circumstance alone occasions them to give less milk, and, he has reason to believe, causes many in the number to slink their calves, as he has had twenty and upwards, out of a hundred and twenty or thirty, slink in a season; for if one should slink, there is generally a kind of succession: to prevent this continued loss, he has taken the first cow from the number into a retired, separate place, thinking some smell remains from the cow that has slinked, which may occasion other cows to do the same; but he never found that to make any difference: those cows that slink their calves, he said, do not produce so much milk the ensuing season as cows that go regularly their full period. I then enquired the time his cows went dry between one calving and another; but respecting that he could not make any positive calculation, as he has had some cows go dry even six months, some four, some three, some two, and some at only six weeks: but, were it possible to milk cows regularly, and to have them go dry as they ought, all cows, to be milked to the greatest profit, should go dry two months, for the following reason;—if a cow, in good condition, be milked longer, she is hard to get naturally dry, as she will again begin to fill in the milk veins one month before she calves. To confirm this reasoning, it may be observed, that heifers of their first calf may be seen one month before they calve to, what is called, *spring* for calving, viz. be flushed in the paps and udder; and that cows, in a general way, do not milk so well the next season after being milked near to their time of calving: and if we average one cow with another to go dry two months out of twelve, or sixty-three days, they will give milk three hundred days; the produce, therefore,

deducting the time of going dry and giving no milk, will be about four hundred and fifty quarts each cow, consequently she must for the three hundred days give about eight quarts and a half each day. I thought the quantity of hay said to be allowed each cow daily might be wrong; but he says it is perfectly correct, though he allowed more hay than is given by many other cow-keepers; for although grains are cheaper food, and will, for a short time, produce more milk, if cows have as many as they will eat, they are apt to stall:—this experiment was fully proved by the dealers wanting more milk on certain days, such as Christmas, Shrove Tuesday, &c. two or three days previous to which, to flush the cows, it is a custom to give them as many grains as they will eat, which causes them to afford more milk at the time; but they loathe their grains immediately afterwards, and then fall short in their milk for several days, the practice being generally very hurtful. This cow-keeper chose to be very careful in not over-feeding with grains, which occasioned him to give more hay. Many cow-keepers giving large proportions of turnips, he tried them, but they proved too expensive to be profitable. He was the first cow-keeper who fed with potatoes, it being a time when they were cheap and plentiful: the cows milked very well on them, but he sustained a heavy loss the next summer, both in his horses and his cows, by that winter's feeding; and he has of late years totally given up the practice, and fed entirely on grains and hay. He has also tried lintseed cake, when it was at a lower price; and his cows fattened and milked well on it; but all the cows that did not get sufficiently fat for the shambles, and were kept on it, were much injured in their constitution: therefore, he does not approve of such forcing food, where it can be avoided. He further says, that even of those cows which are fed on grains and hay,

and grass, for the time before mentioned, he has, in plentiful years of eddish in the country, sent out twenty dry, of which generally from three to five returned much poorer than they went, with their hair reversed, and were obliged to be sold for *cag-mag*, at 2*l.* or 3*l.* each; and consequently, although the keep in the country seemed much cheaper than his own, he was a loser in the end. This cow-keeper has been more experimental and correct than any other I have met with. He once tried barley-meal; but that proved the worst food he ever gave: he is of opinion, that many of the cows would have become dry in a short time with feeding on barley-meal. In the summer, he has tried tares, buying them in the country; but they were much too expensive:—as clearly determined by my experiment.

The gentlemen at the Board observed, that the cow-keeper will not give true information, and seemed to doubt the veracity of my statement, on the supposition that he would endeavour to prevent other men entering into the business, perhaps to his injury; but I am enabled to remove all such doubts and suspicions. The cow-keeper above mentioned has sold his cows, and let the farm, of one hundred and sixteen acres, the rent of which was 7*l.* 4*s.* an acre, or 835*l.* 4*s.* a year, besides taxes; now, if keeping cows would have answered, it is not likely that a man, with a family of six children, all unsettled, and some of them at school, would give up such a farm, with every convenience proper for keeping two hundred cows, and have an entirely new occupation to seek, after following the business for more than thirty years. Add to which, his regularity in his accounts was greater than that of most men, as may be seen in this work; he was so methodical even in the keeping his pigeons, as to charge himself with those he ate; and he ascertained that at the year's end he lost 4*s.* by them.

I have made further enquiries of other cow-keepers, respecting their average quantity of milk. Mr. Wellan, who keeps between four and five hundred cows, was of opinion, that his averaged eight quarts a day. This gentleman, when I mentioned to him the name of the cow-keeper from whom I obtained my information, immediately said, I had got the very best that I should be able to procure. The farms of these cow-keepers join, and they are in habits of great confidence and friendship. I applied to Mr. Warren, who had just sold out about two hundred cows; and he supposed his cows likewise had averaged eight quarts a day. But those two gentlemen spoke by guess; for it is an immense trouble to average the milk obtained daily from a hundred cows, and much more so from four hundred: accuracy from memory is scarcely possible, as the cows in these persons' keep would give much more milk at one season of the year than at another. It was a very great favour done me by the cow-keeper who gave me the account as it stands, and I have every reason to believe that his statement is nearly correct, nor can it be amended.

But, by way of saving the reader trouble, I will give a calculation on the highest statement.—If twenty cows afford eight quarts of milk each daily (being a quart more than in Mr. Kendal's account, page 65), at the present price of milk, the additional quart, being worth a small fraction more than 3*d.* will produce about 4*l.* 12*s.* yearly for each cow, or 92*l.* for the whole; and the loss on twenty cows by Mr. K.'s estimate being 151*l.* 11*s.*, if each cow give eight quarts a day, the loss will be only 59*l.* 11*s.* on twenty cows for an entire year: then, supposing twenty cows to average eight quarts each day for thirteen months, the dealers pay the sum of 1,168*l.* 1*s.* 5*d.*, or 58*l.* 8*s.* 1*d.* a cow; while they receive 11*l.* 11*s.* 7*d.* for water, if not more, as it has been proved that some

dealers use whitening: but the cow-keeper has no opportunity to mix water, the dealers generally milking for themselves, and those that do not are too good judges to be deceived.

I have stated some of the foregoing particulars to strengthen the reader's mind against all prejudice, and to shew that Mr. Kendal's account is founded on truth; for, having been for some time in habits of intimacy and confidence with that gentleman, I have no doubt it is a just and true statement. But, in addition to his testimony, I have learnt that Mr. Roads also has kept an account of his milk for some years, by which it appears his cows never averaged even seven quarts a day.

To be as correct as possible, I have also made enquiries concerning the produce of cows where but a small number is kept, by men who feed, milk, and sell the milk themselves. I have met with one person, who keeps eight cows, from which he averages eight quarts a day, or nearly: this I attribute to his not having so many difficulties to surmount as have been before mentioned, and probably better milking. Another, who kept thirty-five cows, which gave, in the best time of the summer's grass, 312 quarts a day, or eight quarts three pints and nearly two half pints each cow: but this is not so much as the old cow-keeper's cows gave during that season, for he averages nine quarts in his large concern, and some summers he has even exceeded that quantity.

The following account, of the produce of one cow, I received from the President of the honourable Board of Agriculture, with permission to insert it in this work.

" *Soiling and Produce of a Cow.*

" Commencing the 1st of May, 1805, (that being the day she calved), up to the 2d of April, 1806, a space of forty-eight weeks and one day.

" *Communicated to the Board of Agriculture.*

" BUTTER.	No. of Weeks.	Pounds per Week	Quantity of Butter.	Sold at per lb.	Total value.
				s. d.	*L. s. d.*
From the 1st of May, to the 7th of May, kept no account; sold the calf	1	—	—	—	1 7 0
From the 8th of May, to the 25th June . . .	7	15	105	1 6	7 17 6
From 26th June, to the 10th September . .	11	14	154	1 6	11 8 0
From the 11th September, to the 29th October	7	12	84	1 6	6 6 0
From the 30th October, to the 3d February, 1806	14	10	140	1 6	10 10 0
From the 4th February, to the 10th March .	5	8	40	1 6	3 0 0
From the 11th March, to the 24th March . .	2	7	14	1 6	1 1 0
From the 25th March, to the 2d of April; left off milking	1	3	3	1 6	0 4 6
	48	—	540	—	41 14 0
Deduct for butter sold in the month of August, 1*s.* 4*d.* per lb, only for three weeks	-	-	-	-	0 7 0
					41 7 0

"MILK.

	Quarts.
From the 8th May to the 25th June, twenty quarts per day	930
From the 26th June to the 10th September, eighteen and a half quarts per day	1424
From the 11th September to the 29th October, sixteen quarts per day	785
From the 30th October to the 3d February, 1806, twelve quarts per day	1176
From the 4th February to the 10th March, eleven quarts per day	385
From the 11th March to the 24th March, nine quarts per day	126
From the 25th March to the 2d of April, five quarts per day	45
	4921
The milk being measured when milked from the cow, there must be deducted for cream	540
	4381

	L.	*s.*	*d.*
4381 quarts of skim milk, at one penny per quart	18	5	1
Made in the course of the season, four large waggon loads of dung, worth 15*s.* per load, thoroughly rotten	3	0	0
	62	12	1
Total expense	21	6	2
Profit . *L.*	41	5	11

"EXPENSE.

	L.	*s.*	*d.*
Grains consumed the summer twenty-six weeks, 3¼ bushels per week, at 4*d.* per bushel	1	10	4

	L.	s.	d.
Brought forward	1	10	4
Bran, 1½ bushels per week, at 8*d.* per bushel	1	6	0
Winter twenty-six weeks, grains consumed, eight bushels per week, at 6*d.* per bushel	5	4	0
Bran, four bushels per week, at 8*d.* per bushel	3	9	4
Half an hundred weight of hay per week, at 5*s.* 6*d.* per cwt.	3	11	6
Rent of the land whereon were raised the lucern, clover, carrots, &c.	0	15	0
To the wages of a man at the rate of 52*l.* per annum, supposing him to attend ten cows, the tenth part of which is	5	4	0
To the farrier for three drinks at the time of calving	0	6	0
	L. 21	6	2

The cow was fed with artificial grasses, sown on the following plats of ground within the walls of the prison, containing by measurement as follows:

	Rood.	Perch.
No. 1. A plat sown with red clover and rye grass, containing	0	19
No. 2. A plat sown with lucern	0	2
No. 3. Ditto sown with cow grass and white clover	0	17
No. 4. A plat sown with red and white clover	0	18
No. 5. Ditto sown with lucern	0	10½
No. 6. Ditto sown with carrots	0	2½
	1	29

"The above crops of lucern were cut four times, and the clover three times, during the season, producing (each time) good crops. The cow not allowed to feed on the grass ground, but cut and given her in a rack in her hovel, where she has a plat of about eighteen square

perches to range in. I keep but this cow, nor have I had any other since I had her. She is seven years old, and has had five calves; has been in my possession for two years.

"Consumed much less food this year than the year before.

"*Food and Treatment.*

"Summer season fed on clover, rye grass, lucern, and carrots, three or four times a day, and at noon time about four gallons of grains, and two of bran mixed together; always observing to give her no more food than she eats up clean. Winter season fed with hay, bran, and grains, mixed as before stated, feeding her often, viz. five or six times a day, as I see proper, giving her food when milking; keeping the manger clean where she is fed with grains; not to let it get sour; wash her udder at milking times with cold water, winter and summer. Never tie her up; lies in or out as she likes; particularly careful to milk her regularly and clean. Milch cows are often spoiled for want of patience at the latter end of milking them.

"One man would attend ten cows through the year (with the exception of an assistant at milking times). Feeding milch cows as above stated, they will at all times be in good condition fit for the butcher, if an accident should happen. There will be no ground trampled and food spoiled by cattle running over a vast track of land. I think cattle may be fattened by the same mode of feeding with much advantage; one fourth part of the land would feed them, a great quantity of manure made, and the beasts fatten much sooner. Cattle so fed, have nothing to do but fill themselves and lie down to rest. *No labouring for their food.* I fattened the two cows I had before this, and made them very

good meat in about seven weeks, (I found it to answer, although I bought the food at a dear rate), giving them a little ground barley or oats mixed with the grains and bran. I think cows would nearly double (in the course of the season) their quantity of milk and butter by following the above plan. It is unnecessary for a cow to go dry long before she calves. The thing will tell for itself. When her milk changes brackish, she should then be dried off; that may be, in three, four, or five weeks before she calves. Milch cows seldom go dry before, unless it is from neglect, poverty, sickness, or bad milking. Let the milk stand two days in summer, and three days in winter, before it is skimmed. I have stated no more than one penny per quart for skim milk, but I am informed it sells in the town of Lewes for three halfpence, it being worth one penny to put in the hog tub. I fattened two hogs in the summer with no other food than skim milk and grains, making them very good meat, weighing sixteen or eighteen stone each, at 8*lb* per stone. Where cows are kept in this way, hogs should be kept, as the milk will be (in the summer time) thick and sour, and fit for nothing else but hogs. The people of this country making no use of it as food.

" *The following is the Pedigree of the Cow in question, which I received from Mr. Holman, a respectable farmer at Bently in the County of Sussex.*

' The cow belonging to Mr. Cramp, was bred by ' John Holman (my father) at Bently in Framfield in the ' county of Sussex, from a Sussex bred cow, also bred ' by John Holman, on the same farm. She was got by ' a bull bred by Mr. Colgate at Hampstead farm in Fram- ' field aforesaid; the father of which bull was also bred ' by Mr. Colgate, for which he obtained a prize cup at

'Petworth, on the 20th day of November, 1796. She 'was calved in March, 1799.

(Copy.) 'Witness, THOMAS HOLMAN.

'Lewes, March 1806.'

"N. B. My cow calved on the 19th day of April, the calf in very fair condition; the cow having been dry for seventeen days *only*, was taken bad with the yellows at the very time of calving, but is now recovered and going on very well. The calf sold at twelve days old for 1*l.* 10*s.*

"WILLIAM CRAMP,

"Keeper of Lewes House of Correction."

"Lewes, May the 10th, 1806."

I am flattered by meeting with the preceding account, as it serves, in some measure, to corroborate my own opinion given in this work; for I consider the kind of cow there mentioned as being one of the best poor man's cows of any English breed, on hard keep. This is a well-authenticated statement, and must stagger many readers: the long continuance is wonderful. But 16lb of butter have been given by a Yorkshire cow in the county, as affirmed by a clergyman to whom she belonged. The quantity of milk is nowise equal to that given by some of the Holderness breed; as it is well known there have been cows of that sort which have afforded thirty-six quarts a day for a short time; but I believe that to be in the summer months, the period when pastures are in the highest perfection, to which probably there is no keep equal at that particular season of the year. Great praise is due to the management of the cow, both as to keep and process in milking, with the other dairy business; and it substantiates a fact which will bear no contradiction. An assertion is too fre-

quently made, that when cows give much milk, it is seldom or ever of a good quality; but, as it is allowed that a quart of good cream produces 1lb of butter, in this case the quantity of cream will be about one ninth part of the cow's milk. Now, by this mode of calculation the reader may inform himself what proportion of cream cows produce that give a smaller quantity, such as four or six quarts of milk a day; and he may readily determine as to the kind of cow that will produce the most butter. But, without any further elucidation, it will be found that cows, to give much butter, must produce a nearly similar proportion of milk, or at least much milk; although there is considerable difference in the goodness of milk from cows kept even on the same pasture or like food.

This cow's milk, being 4,921 quarts, with the usual quantity of water put to it by the London dealers, one fifth, or about 984 quarts, in all 5,905 quarts, at 4*d.* a quart, which is the London price, would have given, for one year's milk, the sum of 98*l.* 8*s.* 4*d.*; and the expense of keep, at the present price of cows' feed, for one year, would be 41*l.* 15*s.*: the balance in favour of selling the milk in London, as a better market than Lewes, is 15*l.* 7*s.* 6*d.* The milk sold by the cow-keeper to the dealer, 615 gallons 1 quart, would amount, at 2*s.* 1*d.* a gallon, to about 64*l.* 1*s.* 6*d.*; expense, 41*l.* 15*s.*; profit, 22*l.* 6*s.* 6*d.* This likewise serves to prove Mr. Bakewell's idea, of feeding cattle, sheep, &c. in small pastures, to be worth observation; though a very great share of this cow's profit arose from Mr. Cramp's judicious management: but, notwithstanding every thing was properly conducted, she cost about 8*s.* 2*d.* a week keeping. She averaged about thirteen quarts one pint of milk a day, gave milk three hundred and twenty-eight days, and produced 540lb of butter, or 1lb 6 oz. 8 dr. and a

little more each day, which sold for 41*l.* 7*s.*, and the milk for 18*l.* 5*s.* 1*d.*; in all, 59*l.* 12*s.* 1*d.*, or about 3*s.* 3*d.* per day for a whole year, allowing the time she went dry: and cost in keep only 14*d.* a day; therefore she paid 2*s.* 1*d.* a day, exclusive of dung.

Now, had this very cow been brought to London, put with two, three, or four hundred cows, tied up to stand on the bare stones, and disturbed by other cows, it is a doubt with me if she would have averaged more than half the quantity of milk. Mr. Cramp's method of feeding, milking, and *not tying his cow up*, were all extremely judicious; indeed, there is not a single consideration in his practice, that does not carry with it reason and judgment; though not better known, or more wanted, by any set of men than by the London cow-keepers, could such measures be adopted, but it is impossible in town. I have heard one of the oldest cow-keepers, and once proprietor of the largest number of cows, say, that if it were only possible to have a straw fold for the cows to rest in during the winter nights, it would be of infinite advantage; as by standing on the bare wet stones many get lame of their hind feet, and frequently bruise their udders; whilst others, resting with their fore feet bent under them, in lying down and getting up jelly their knees. All these misfortunes Mr. Cramp's cow escaped; she had all kinds of healthful food to eat, and could rest and sleep as she pleased and when she pleased.

Since writing the preceding pages, I have repeated my enquiries respecting the average quantity of milk given per day for one whole year by each cow; and the same cow-keepers who, when I first asked them, gave their opinion at eight quarts a day, on reconsidering the matter, feel convinced that seven quarts are a full average of any cow-keeper's cows for an entire year, allowing cows

to go dry two months, which they agreed their cows, on the average, do, and likewise that cows ought, to be milked to the greatest profit by the London cow-keeper.

There is one thing very material to be attended to in the management of cows, viz. some of the most discerning men, as the cow-keepers in London, having at times sustained great losses by what is called the milk-fever, (see page 19), have observed it generally to happen to cows that are in the highest condition; and as the cause arises from a superabundance of milk, they have tried the milking of such cows as have their udder hard and full of milk, a few days before they calve, which has been crowned with success as a preventive:—for this fever is very seldom cured; many things have been tried, but they have rarely been found effectual in overcoming the disorder.

SECTION XIV.

Putting Heifers to the Bull.

THE most proper time is at two or two and a half years old: if they go till three or three and a half, I have observed them not to stand their bulling. I have known a heifer take the bull at one year old, and make a good beast; but I cannot recommend so early a period, as there is great danger in calving. I had three heifers when I lived at Slane took the bull at that age; I believe in consequence of their being reared in the open air, at the hay-stacks, which caused them to be forwarder: I had not the least idea of that happening, or I should have prevented it, as I think it very injudicious. On the other hand, if cattle heifers be of a fattening kind, well reared, and properly supported, at the age

of three or four years they are frequently too fat. When I was at Woburn, the Duke of Bedford had some very fat three-year old Hereford heifers in the park, which would not stand their bulling: I advised the duke to send them to worse keep; he did so, and they afterwards bred very well. But the time, or age, of giving heifers the bull depends much on the kind, and on their keep; as heifers raised in a proper manner will be forwarder at two or two and a half years old, than those that are kept back by being starved at three or three and a half; consequently, there is a gain of one year in three by good keep. Cows that are in season quickly after calving, as three weeks or a month, should be put off until the next time they are in season, which is most generally after a lapse of about the same period. I have given a cow the bull three weeks after calving, but never knew her stand that bulling; and it often happened she did not stand the next; I therefore consider it very improper. At the time the cow takes the bull, I have found from experience it is advisable to let him give her but one leap; for if repeated, it occasions the cow to strain as if she wanted to get rid of the whole: and I further consider it very necessary to tie or shut the cow up after the bull has served her, and not to let her mix with other cattle, for twenty-four hours, as they are apt to ramble and ramack one another, by which proceeding the cow may lose her bulling. When I lived at Slane, I had twenty-eight heifers bulled in the same number of days, and by observing the course here prescribed there was but one that took the bull a second time.

It is the opinion of some persons, that by suffering heifers to be three or four years old they make finer cattle; but I never found any material difference; while there is a loss of one year, besides the danger of not

standing the bulling: and it adds very much to the profit of the heifer if she be given the bull at two or two and a half years old; for then the time she is in calf, which is forty weeks, added to that of the calf sucking, twelve or thirteen weeks, with the time she will be fattening, bring her to four or four years and a half when she is slaughtered. A heifer that has had a calf will fatten quicker, and tallow better, than one of the same age that has not: while a calf is gained worth at least 3*l.* if sold to the butcher, and considerably more, if of a good breed, as a store beast: while I lived at Slane, I have sold a calf for store, at one month old, for ten guineas.

But the most profitable management of heifers intended to rear calves for stores, is to milk them, take the butter, and rear the calf on skim-milk. I have had a heifer which, with her first calf, gave 9lb of butter weekly; but if we average it at 6lb, at 1*s.* 3*d.* a pound, for twelve weeks, the produce will be 4*l.* 10*s.*; and the calf, if properly served and well supported, will be equally as good at four years old. It is a very good and advantageous method to take one calf from heifers that are destined to be slaughtered at the age of four years; the gain is, on an average, from 7*l.* to 8*l.*, while the heifer becomes a better butcher's beast, with no other expense to deduct from the profit than the milking and serving the calf, as the butter-milk will pay the churning.

Method of causing the Cow to take the Bull.—When you want a cow to take the bull, give her a quart or more of milk immediately drawn from a cow that is in season, before the bull has been admitted to her, and in three or four days it will have the desired effect. When I lived at Slane, I had many times occasion to make use of this expedient.

SECTION XV.

Different Kinds of Cattle.

FOR the more plainly distinguishing the varieties of cattle, the horns and colour are generally regarded; I shall therefore adopt that consideration in the following account.

The LONG-HORNED, CRAVEN, or LANCASHIRE breed, is distinguished from other cattle by the length of the horns, which chiefly grow downwards, in a circular manner, so as frequently to pierce the sides of their cheeks, if not cut off at the ends. Their colour is brindled, with yellow, brown, and white spots; and all of them have white backs, thick hides, and longer hair than most other kinds: they are variegated with different colours on other parts of the body; on the belly and lower parts generally is much white, but they are scarcely ever white faced: there are some few black, and some blue, whited as above described: and they are commonly longer in the carcase than any others, according to their height. These cattle are the most beautiful for parks, or gentlemen's grounds; as there is a grandeur about them which no other cattle possess. The *Rollright* have acquired that name from the great improvement made in the breed by Mr. Fowler of the place so called, and are distinguished by the high prices they fetched at his sale, as will hereafter be shewn: but if price establish their still further improvement, Mr. Princep now excels every breeder yet recorded, as he has been bid five hundred guineas for a two-year old bull, and thirty guineas a cow for the use of his best bull to fifty cows. The best of this breed, especially the heifers and cows, are formed for the butcher superior in shape to any other kind: (for their description I refer the reader to that of

the bull in the former part of this work; with which they so nearly agree, that it is needless to say more). Their milk is said to be better in quality than that of many other kinds; but they are rarely what is termed *deep milkers*, as they have a very great aptitude to fatten. As may naturally be expected, they go a long time dry, between the producing of one calf and another: nor do I think them very proper for the yoke, as they come to their proof at an early period, generally, with proper keep, the heifers at three years old, and the bullocks at four years. There are four kinds of cattle put in competition with the Rollright, viz. the Devon, the Sussex, the Hereford, and the Yorkshire; but I am of opinion that none, at an early age, equal them for slaughter, or that will pay so much money for three years' consumption. There are some considerable advantages attending those cattle when brought to the shambles:—their hides have been sold at three guineas; but, on the average, they are worth more by one pound each than most others: while, from their form, they must cut up to greater profit; as they are remarkably long in the rump, and in the chine, up to the shoulders, heavy in their plates, and good in the twists, to form a handsome buttock, as it is called in London, or *round*, as it is termed in the country: they are extremely light in the shoulders, compared with many other, or indeed any other, breeds.

The YORKSHIRE or TEES-WATER cattle are known by having short horns, some standing very upright, being what is termed *stag-horned*; but more generally hanging rather down, or pushing straight forwards, by some called *crumple* horns, which, if small, are the best form: the colour of the horns is white, black, or occasionally yellowish, with red spots, which is the most proper colour, indicating a great aptitude to fatten.

The hide is rather thin in general, with short hair; in colour fleckered, black and white, red and white, blue and white, or brown and white; and many of them beautifully diversified with spots: some have mottled faces, while the carcase is nearly all of one colour, black, red, blue, but those do not sell so well in the London market. The best of this breed, being larger than any other kind, require good keep, and more age than cattle in general: the oxen will improve to the age of seven years, and the cows to six; and if they are not well supported when young, will require another year. The cows are by far the best milkers in the united kingdoms; they have large bones, and are said to be coarse grained, and the beef not so marbled as that of some other kinds: I have endeavoured to determine this point by viewing the carcases in the London markets. Some of them die very fine beef: many have larger shoulders than the Rollright or several other breeds. There is an improved breed, by Messrs. Collins, Culley, Coats, Charges, and the late Sir George Strickland, that, according to their great size, are remarkably fine featured; but they have got the name of very bad milkers. Many of the Yorkshire cows that come to the London market, generally bought by the first-rate cow-keepers, are the most perfect cattle shewn in the metropolis:—they are fine in the chaps, with less dewlap than any others, except the best of the Rollright; many of them are rather high, standing long in the leg, heavily fleshed, and good in the chine; with large hucks, rather short in the rump and loins, yet heavy: it is allowed they are the best beef for ship use, take salt readily, and are the most juicy: on the whole, where soil and climate suit them, probably none are so profitable for every purpose. I have witnessed some cows of this kind, out of milk, making at least as rapid improvement as any ever under my observation. I knew an in-

stance of one of them, at the age of seven years, bought for 8*l.* by a grazier, which, after being milked till the 5th of April, was put to grass with others, twenty in number, (the pasture was twenty-seven acres, on which were also five horses and ten sheep), and sold the 5th day of July for 17*l.*: she was ninety-one days grazing—nearly 2*s.* a day. But some of these cows give large quantities of milk, and it seldom happens that food turns to two profits at one time: however, there are no cattle can vie with them even in that respect, as no other cow will make herself so fat in a cow-keeper's barn in London.

I doubt whether any other ox would pay so well as the Yorkshire, to work him for three or four years—considering his price when he begins, and his value at ending—from his superior size. Supposing he be taken to the yoke at three years old, worked three years, and fed at seven;—if fattened at three years old, he would weigh about fifty stone, 14lb to the stone; and if made fat at seven years old, he would weigh ninety stone; taking beef at 7*s.* a stone, his increase being forty stone, he would gain 14*l.* in four years, or 3*l.* 10*s.* a year: if worked but two years, and fattened at six years old, he would, with good food and easy work, attain the same weight, and would then pay 4*l.* 13*s.* 4*d.* a year. I am persuaded that none of the other breeds would do that, as they are all of less growth; which shews the greater value of large oxen to keep to an advanced age, notwithstanding the Rollright, on suitable situations, may be fattened at three years old, making two returns in the time, which would be more profitable; but as the latter come to their proof so early, it is a loss of time to use them for the yoke.

YORKSHIRE POLLED cattle vary from the short-horned, already described, only in being without horns, which is a loss of about ten shillings a beast;—as will be

hereafter more fully explained. These cattle are equally large and handsome, and as good for the pail. There is a very conspicuous mark, by which good breeds may be distinguished from bad; namely, if the crown of the head be fine, like that of a doe, drawn almost to a point on the top, it indicates that the breed is good; this observation is worth notice in horned cattle. They require both richer food and greater age than many other kinds, to bring them to perfection; and are the most improper to breed on barren soils, badly sheltered, for such stinting would render them, in a very short space of time, small and coarse; and as age is required, they suit best on situations a great distance from market, where part of the land is not good enough to fatten, but of a grazing quality, to keep store stock in a growing, thriving state, and a portion sufficiently good to make them up for sale. Great numbers of these cattle, bred in Yorkshire, are fed in the fine rich marshes of the county of Lincoln. But the best of them, both polled and horned, although of a good kind, are fattened at a more early age than their nature requires. Some of these large beasts are particularly fine in the crown of the head—a point to which great regard should be paid in the choice of a bull, for several reasons: I have observed it to be a valuable symptom as to fattening; but from a general remark of the cow-keepers in London, a cow's having the least appearance of a bull is a sure sign of her being a bad milker, therefore the finer the bull is in the forehead, the more likely are his offspring to resemble him. Many cattle of these breeds have the worst of hides, so thin as to be deemed *paper-hides*, which is a great fault: but it frequently happens that cows with those thin hides are very good for the pail; the best of them will give from thirty to thirty-six quarts of milk a day, from the time of calving till within three or four

months of their calving again, on deep grass, or any very high feed, and will milk nearly the whole of the period: these cows are in so general esteem with the best-informed London cow-keepers, that not a single cow, in many of their stocks, is to be seen of any other kind, even where hundreds are kept.

The cows of this breed are much more in use among the dairy-men for butter, than they were some years back; the reason assigned is, they give a greater quantity of milk than the long-horned cow, by which means more pigs are kept. They are not said, by those dairy farmers, to afford more butter at their first calving; but by continuing to give a larger quantity near to their time, there is, on the whole, a greater profit: the proportion of food is found to be precisely the same. I have, from much experience and observation, reason to believe, that one of the best of these cows will give more milk during a whole year than three of many other kinds; while the quantity of food they take is not more, or at least so little, as scarcely to be perceptible in my own trials, which may be seen in this work: in the small Scotch or Welsh cows there was a difference; five of them, weighing from 280 to 420lb, consuming the same quantity of food as four Yorkshire cows, weighing from 700 to 980lb. They probably drink more water; for I observed a cow of this kind which I took on board of ship drank considerably more than any other animal on board, though I had both Devon and Rollright; she has consumed thirteen gallons a day for some time, while the others seldom took above six gallons: this was a fair trial, as they were all supplied by measure, and had as much as they would drink: as to food, there was no difference.

DUTCH cattle.—Mr. Culley having mentioned this kind, I have been induced to give a description of them;

as it may be proper, in an author writing on animals, to take notice of bad as well as good, especially any so vile as those. From their being called Dutch, it would seem they came from Holland. I have great reason to believe the Yorkshire short-horns came from that country; for when I was in America, General Long had imported six heifers and a bull, which were, in colour and every other appearance, like the Yorkshire cattle: they were large, but rather clumsy, not nearly so good as the best of the Yorkshire kind; but that may be accounted for, by the consideration that most uninformed people rather admire size than symmetry. Another neighbouring gentleman had imported some from England, of the Yorkshire kind, from a place near York: they were of the large, coarse sort, rather more so than those belonging to General Long. I saw a very good short-horned cow in Philadelphia, imported from Holland, inferior to few in this country. The gentleman who had imported cattle from England became bull-breeder, and dispersed his bulls into several parts; but they answered very indifferently in America, and were so much disliked, that a butcher of any credit would not purchase a calf to kill, if he knew it to have been got by a bull descended from the breed of Mr. Gough—the name of the gentleman. They were extremely improper for so poor a soil, without grass, and a climate unfavourable to almost every sort of cattle. My reason for saying so much on this subject is, I am in doubt whether the cattle called *Dutch* were imported, or are the breed of England; being remarkably thick of flesh in the thigh, and clumsy about the *breeches*, they may have taken their name from that appearance. My grandfather had a bull of the kind from the Duke of Newcastle's steward, which was, from the novelty, made much use of at first by the family, and very great loss they sustained, not only by introducing a bad sort, but

many of the cows died in calving, or the calves were killed by being drawn from the cows: the calves were very large, and full of flesh, for which Mr. Culley has found a proper appellation, namely, *lyery, double lyered,* or black fleshed. He has said, they will feed to a vast weight; I think it would be more proper to say, *grow to a large size*; for, as Mr. Culley has justly observed, if they are fed ever so long, they will not have one pound of fat about them, either within or without. I cannot describe their form better than by giving Mr. Culley's words: he says, "I once saw a beast of this sort killed, "which, after feeding all summer, had not a pound of "fat inside or out, but it was one of the completest of "the kind I ever saw; its two ends, viz. shoulders and "buttocks, were heavy, round, and coarse, without any "hip-bones at all standing up, and the body quite small; "in short, it was more like an ill-made black horse, than "an ox or cow." Those of my grandfather's, in colour and horns, were very like the Hereford cattle; generally red, with white faces, and seemed a hardy kind: they looked well, healthy, and full of flesh, but could never be made fat. Mr. Culley remarks, that they may be known by the smallness of the tail: but that is no criterion of a bad breed; though I rather apprehend the tail looked small merely from the thickness of their thighs. It may be unnecessary to caution the reader to reject cattle of this description: *fashion* now reigns in many things; but I think there is no man so deficient in judgment, as to fall in love with the breed I have here designated under the appellation of *Dutch* cattle, to distinguish them from the true and respectable Yorkshire kind.

HEREFORD cattle.—These may be properly termed *half-horned,* being very similar to the cattle bred from a short-horned cow and a long-horned bull. The horns

are generally white, neither short nor long, rather rising upwards, but not so much so as the Devon and Sussex: most of them have white faces, bellies, and throats, and all their lower parts are of the same colour, with some white on the shoulders, or rather the chine, but seldom continuing along the back in the ornamental way of the Lancashire cattle. Their colour is chiefly a dark red; some are brown, others yellow, but scarcely any blue or black; some few are brindled with white, as before described: they are not a showy sort of cattle, having little of the *gentleman* about them, but are of a very useful kind. Their hide is of a moderate substance, neither so thick as a Lancashire nor so thin as a Devon or Yorkshire: they stand stall-feeding better than the Lancashire, but not equal to the Yorkshire; will thrive better in humid climates than the latter, though not so well as the former, as, from their size and disposition, they require rich land and good keep. I saw several of this kind of cattle that had been imported into Ireland; and which, on worse keep, did much better than some Devon, imported about the same time; (there were likewise many long-horns, Leicesters, imported, which succeeded better than either the Hereford or the Devon).

The Hereford cattle are larger than any other sort, except the Yorkshire; the largest oxen attaining the weight of from 980 to 1400lb, the cows from 700 to 980lb. They are well formed for the yoke for heavy burthens, not being so active as the Devon or large Welsh; are short in the leg, and rather so in the carcase, from head to tail; their bones, compared with some of the most fashionable kinds, are rather large, though probably not of too great size to be completely useful, as it seems to me animals should have bone and sinew in proportion to their flesh: they are heavily fleshed, many of them are fine grained and beautifully marbled, with a more regular pro-

portion of fat and lean than some other breeds; rising a little higher in the chine, towards the shoulders, but generally broad, which renders the chine thick and heavy; though, if they were somewhat longer in the carcase, it certainly would be a perfection, by making more good cuts in the chine and loins: their hucks are round, wide from one to the other, and well covered with fat; their rump is well formed, the thigh rather heavier than some delicate breeds, but not too heavy: their shoulders are mostly large, in consequence of which they have more coarse boiling beef than they ought, and, notwithstanding they have a great propensity to fatten, and die well filled with fat, it is often irregularly placed, in patches, but which may probably be owing to their being kept to an advanced age, many of them being worked in their youth, as I have observed all kinds of cattle kept beyond their prime are liable to acquire that appearance; and although an ox that has been worked, often till seven or eight years old, will frequently prove a kind feeder, and make himself fat, he will not be so equally proportioned in every part with fat and lean, as a steer of the same kind slaughtered at the age of four or five, nor will the meat be so juicy, while the brisket and lower parts eat tough and hard.

Cows of this kind are not deemed good milkers; in confirmation of which opinion, I do not believe there is a single cow to be found in the possession of any cow-keeper in London of the Hereford breed. When I surveyed Buckinghamshire, though almost an adjoining county, and in which there is much dairying, I do not remember seeing one cow of this sort; but there were many fine oxen: Mr. Westcar had eighty oxen, chiefly of this breed, the best I ever saw, in so large a number together, of any kind, fed in the same pasture. On the whole, they must be allowed to be a very valuable breed,

and well fitted for the grazier: the oxen seem to be in their prime at five years old.

The DEVONSHIRE cattle are distinguished by being of a deep red colour, with little or no white on any part, excepting the horns, which rise very uniformly upward; they are thin faced, and light in the chaps, with a light dun ring round the eye, and muzzle of the same colour; quick in the eye, smart and engaging in their looks, very lively, rather long in the leg, small boned, thin hides, bright and short hair (long curled hair is highly objectionable), short in the carcase, but generally very round, and shewing much light under them, but very well proportioned: the best of them have a strikingly beautiful appearance; and they bear the greatest likeness one to another of any breed I know; which may be owing to the care of the breeders, who are very particular in their choice as to colour, it being an almost general maxim to breed from none but such as are entirely red, and to reject any that have white upon them. It may be said, with justice, they are a copy for all persons who breed oxen for the yoke, as it is probably advisable to have the cattle as near of their make as possible; for I suppose none equal to them in the plough. They have great propensity to fatten, and make fine flesh, and at least as good shambles beef, for their size, as any other cattle.

The bulls of this breed are generally more inferior in their form, considering the beauty of the cows and oxen, than any other kind, and seem *lyery:* some of them, in their make, are even not much unlike the description given of the Dutch breed, which I have treated with so much contempt; being very heavy in the neck, thick on the horn, or rather stag-horned, thick thighed, with a small tail: the hide, although thin, is silky, and they are good handlers. It is somewhat singular, that although these bulls have generally much leather, large dewlaps,

and seemingly many imperfections, the offspring do not in the least partake of these defects; for I believe there is not any breed of oxen and cows with so little dewlap, or any sort of coarseness about them. The cows are allowed to be very bad milkers, which, indeed, their make pronounces: their milk vein is generally small, as is the navel vein, nor have they any loose skin about them; which, although it be an imperfection in cattle, is, I am persuaded, the second best sign to be observed in the choice of a milch cow, the milk veins being the first. During my survey of Rutlandshire, I was much of the time at Earl Winchilsea's; where, his milch cows being of the Devon kind, I had an opportunity of observing the quantity of milk given by them in a morning: there were fifteen of them, all in milk, and I felt thoroughly convinced it would have been easy to find three Yorkshire cows that would have given as much as them all; but I do not think that general in all the breed. Since that time, I have surveyed Dorset, where there are many cows of the Devon kind, or at least of the same make, colour, &c.; which cows, in that county, prove themselves not bad milkers. Mr. Bridge's cows, of the Devonshire breed, averaged 5lb of butter a week; and there was another farmer, who let out one hundred of this kind of cows for a thousand guineas: now I question if there be a hundred cows of any other kind that give the farmer so great a profit in one year, selling milk and cream excepted. I have heard it remarked, that the Devon is a good butter cow, but gives little milk; though in this case it must have been good for both butter and cheese: for a cow is said, from skim-milk, to make two hundred weight of cheese in a season in Dorset, where the cows all live on very short pasture. Under these circumstances, therefore, I have reason to believe, that

there are certain situations better suited to one sort of cattle than to another, for I have known several similar instances. The late Duke of Bedford bought three heifers, the very best that could be obtained, of the Yorkshire kind, one of which, for two years together, had won the prizes; they were then three years old: I saw them in their road to Woburn. When I had the honour to ride over the farm with his grace, he shewed me many fine cattle of different breeds; but not having seen those three heifers, I asked his grace where they were; he said, they answered very badly with him, as they neither milked nor fed, and he had, in consequence, sold them to a friend, with whom they did very well. I could quote other instances of the same kind.—I know a tract of ground, from Rotherham leading into Derbyshire, where Yorkshire cows have been tried to a disadvantage; the long-horns beat them considerably.

Devon cows, it appears, are more proper for thin, dry soils, than most improved breeds; indeed, my experience has convinced me that such soils are best suited to them. —While I lived in Ireland, Mr. Grew sent the Bishop of Meath a bull, and two or three heifers, the neatest I ever saw; they were remarkably complete; and the bishop's land is some of the very best in that country, well inclosed with good quick-thorn hedges, and suitable cow-houses: since I came to London, I have seen the bishop, when I asked him how they answered; he said they succeeded so badly with him, he had parted from them:—I had told the bishop, when I had the honour to ride round his farm, that they were too delicate to bear the humidity of that climate. I have also reason to assert, they will stand stall-feeding uncommonly well.— When I went into America, I had a bull and a heifer on board the ship, of the Devon kind; they were brought

upwards of four hundred miles to the ship, were twelve weeks on board, and the heifer was fat beef when she arrived in that country.

Mr. Bridge, in his first trial of this sort of cattle, bought them with thin hides; but he found them too tender as working oxen, nor did they stand their work so well as some he has now, with thicker hides and more bone. His present breed of Devon are superior to most I ever saw: they are more properly formed for all useful purposes;—shorter in the leg, rather longer in the carcase, and the cows are better for milk, with stronger milk veins: the weight of his oxen, some five, others six years old, fed on lintseed cake and hay, a few potatoes and turnips, is from 800 to 1000lb: in general the breed are not so heavy, from 560 to 840lb; his cows from 420 to 560lb. Although I have admitted them to be good feeders, they are not so generally so as some other breeds: many of them that come to Smithfield are very thin beef, and light shelly carcases; but those are mostly light in their bone, and fine flesh, for which reason the cutting butcher does not dislike them. On the whole, they must be allowed to be good cattle for thin soils, and particularly where oxen are worked at the plough: when slaughtered, they are a sort of beef that suits the consumption of many customers. Mr. Bridge tried a cross with the Suffolk bulls, but found the breed not to answer as working oxen.

SUSSEX cattle.—These are so much like the Devon in colour, horns, &c. as to be, by a stranger, with difficulty distinguished; but there is a small variation.—In colour, the red is lighter, with more yellow; and they are generally heavier, of larger size, with a greater proportion of bone, and thicker hides, and are not so sprightly in their appearance: they seem to require a better soil and stronger food. The general run of these oxen are the

most complete of any that come to Smithfield, though many of them at great ages, even older than the Devon; notwithstanding, they are less patchy than most other breeds are at advanced ages. Mr. Culley has described these cattle as being well made, except in the ribs, which he says are too flat, and the chine narrow. I have seen many of them in Smithfield, but I never discovered them particularly to have such a fault; indeed they have appeared to me as little so as any general breed I know, except some improper crosses: while the cutting butcher has found the being very round in the rib, or flat in the chine, a great defect in animals; as when so round in the rib, they lose much weight, and are greatly deceitful; and when the chine is so very flat, there is not the proper thickness throughout that part, which makes them prove lighter than they ought. The weight of the oxen is from 840 to 1400lb, though the latter weight is very rare. I saw one killed at York weighed 1400lb; the best ox, in the least room, I ever saw: he was only four feet eight inches high; but was an extraordinarily good carcase, and very full of fat. These oxen are distinguished as being valuable for the yoke: they have every serviceable and thriving appearance, and, compared with most useful animals, are particularly well formed, but have not that sort of nimbleness, nor do they move so lightly as the Devon, being more calculated to draw heavy weights. They are strongly made in their fore-quarters, with rather large shoulders: Mr. Culley has said, their fore quarters are heavier than the hind;—a form, I believe, common to all breeds, taking the general run. By their hides being thicker, although good handlers, with much hair and some curled, I am of opinion they are hardier than several other kinds; as the hide being moderately thick, not in the extreme, with curled and rather long hair, is a protection against in-

clemency of weather, and a good quality in most cattle: but the hair ought not by any means to be thick set and mossy; for if it be, rain and snow will lodge in it, and the animal be consequently rendered colder: the thinner and longer it is the better. Mr. Culley mentions the rearing of calves by sucking the cows until they are eleven or twelve weeks old, which seems an expensive practice; for, as he says the cows sometimes give 8lb of butter a week, it lays 6*l.* a head on calves so reared, while the milk after the cream is taken off would be more than sufficient for the purpose: it may be an advantage to the calf, but cannot equal the expense; nor have I found it a good way to keep young animals on extremely high food, unless it can be continued. I do not mean to advocate low keep; though we have had, by the same bulls and from the same kind of cows, as good oxen reared at the kit as by sucking the cow. It was our practice for some time, to rear six at the kit, and four with their mothers, but only one calf to one heifer; for it is an almost general custom to rear five calves on one cow in a season—two for about the first twelve weeks, then two more for twelve weeks, and one after that; which I think an idle way of doing business. The butter pays well for milking the cow; and if the cow do not, with care, give a sufficient quantity of milk for two calves, a small portion of pot-liquor or lintseed jelly may be given:—it may be seen, in this work, the largest ox as to size ever shewn in Smithfield, was reared chiefly on pot liquor. Mr. Culley states these cows to give from 6 to 8lb of butter a week, which is more than the general average of some other breeds;—the average of Dorset and Somerset is 4lb a cow: and he says they afford twice that quantity of cheese, which, at 14lb a week, for twenty-six weeks, is 364lb; while the average of these two counties is only 224lb: therefore, if the information given be correct, it

pronounces them good milkers; but I rather think it is taken at the highest, for with such advantages, some of them would certainly have found their way into the London cow-keeper's stables, which must be the best market for good milch cows; at the same time that, the metropolis being in a neighbouring county, they would have every advantage, as to droving expenses, and not being injured in travelling, to which the Yorkshire cow is particularly liable in coming so great a distance, and the Yorkshire cow is averaged at about seven quarts a day in the cow-houses in London. I am of opinion, that it will be as good a maxim as the reader can follow, to notice the London cow-keeper's proceedings, whose food is generally suited to his cows, for either milk or butter.

SUFFOLK DUNS.—These cattle are polled, or no-horned; in colour, many yellow, and mouse coloured, with much white; many are fleckered; the lower parts of their body, legs, &c. chiefly white: they are short legged, long in the carcase, and some of them of a very useful form; all of them rather deep in the rib, and some of the cows drop very much into belly, which is frequently an indication of a cow being a good milker, and I am of opinion there are no cows of their size that give so much milk. I consider them a very good poor man's cow, as there are few soils or climates where, from their size and form, they would not only live, but, with care and attention, do well. They have been described by writers as being very plain; but I have seen some of these cattle brought to Smithfield which were excelled by few as shambles beef, and extraordinarily kind cutters: in a general way, I do not find any beef before them; and in shape, they are well formed. The milk vein of the cow is very strong, as are the veins to the navel; the udder square, their paps being of a proper make and size; the heads of some rather clumsy,

and much dewlap, which is a fault, as is all loose skin, except in a cow for milk alone; but I have observed at Smithfield very useful fat cattle with a heavy dewlap. I scarcely ever see a good beast with a bull's forehead; and it is a much greater fault for a beast to be coarse in the crown than in his dewlap: some of those cattle that have large coarse dewlaps, have a very fine appearance on the crown. It has been asserted, that the best of the cows will give twenty-four quarts of milk in one day, which is more than is given by any other cow of the size; and that the profit of one of them, for a year, is 7*l.* 10*s.*: if this last information be correct, it shews the dairy to be ill managed in the county of Suffolk, for in the statement are enumerated butter, cheese, a hog, and a calf! It is further said, that the butter is perhaps of the first quality, and the cheese of the worst; the accuracy of which opinion I very much doubt: I question whether the butter is the best, and I think the cheese would not suffer by a comparison with the York cheese called *wang*. In their estimates, the milk and the quantity of butter bear no sort of proportion to each other; there must be an error in one: for if the produce of this cow be calculated for only half a year, or twenty-six weeks, the butter would be 184lb, which at 1*s.* a pound, taking that to be the price allowed, would give 9*l.* 4*s.*; the cheese, say 1*l.* 4*s.*; the calf, 10*s.* and a hog, 1*l.*; in all, 11*l.* 18*s.*: at present, the butter, at 15*d.* a pound, would be 2*l.* 6*s.* more, independent of any increase on the cheese; the hog would be worth, in butter and cheese counties, 2*l.*; and the calf about 15*s.*; thus the whole amount at this time would be 15*l.* 9*s.*: skim-milk cheese fetches from 2*l.* 5*s.* to 2*l.* 15*s.* in Dorset and Somerset, so that if the milk were as well managed in this case as in those counties, it would make the sum about 20*l.* 9*s.*—certainly much nearer the truth than the

other. In Dorset there are whole dairies of cows let at 12*l.* a cow; and the dairyman must be allowed at least 3*l.* as a living profit: but there will always, in a dairy of cows, be some superior to others; and, supposing this cow, as described, to be one of the best, though here and there a cow may be found to give a like quantity, instances of the kind are, I believe, very rare. I have been induced to investigate this statement, in consequence of having given my opinion that this cow is a good milch cow, which the writer's account tends to substantiate, at least as to milk, though not in profit. There is another circumstance which seems to prove these cows good milkers, many of them being sold in Smithfield, to different people, some to small cow-keepers, and a few to the large cow-keepers.

The oxen of this breed weigh from 560 to 700lb; the cows from 420 to 560lb; the beef I think equal to many Scotch cattle. Mr. Culley having stated his belief that they originated from the Galloway Scots, the reader will not think it presumption in me to make the comparison, as he has included the Scotch Galloway with them.

The GALLOWAY breed, or POLLED cattle, are valuable, and in almost every respect like the last mentioned; but those I have seen in England are, in general, of a mellower appearance; few of any kind excel them. Their colour is frequently a very mellow brindle, with white backs, resembling the best of the long-horns; and many of them are remarkable in symmetry. They are not so long in the carcase as the long-horns, but longer than many other breeds; rather, what some critics would call, too large in the bone, but I do not think so: they have as much use about them, for their size, as any breed whatever; and may be considered one of the very best kinds for the cutting butcher. Although they are,

in general, polled, a few have horns from two to four inches long, hanging in a remarkable manner, by the skin only, not growing from the bone of the head like the horns of other cattle. When I lived at Doncaster, I had an opportunity of viewing hundreds of them; but as I kept cows, with few oxen, I never had occasion to buy them; for although there were many heifers came that road, in their way to Norfolk, they were all spayed, or, from their handsome form, I had a great desire to select a good one for a cow, that I might have milked her, and seen what progress she would have made in fattening. These cattle are somewhat extraordinary; for, from the best information I could obtain, it appears they are bred on moors, in a sort of wild manner; notwithstanding which, numbers of them are as correct in their form as many of the improved breeds in England. Mr. Culley says they attain the weight of from 560 to 840lb, and some 980lb; which I should not have thought. He likewise notices their esteemed value, as better beef than many others; and states that a Lincolnshire grazier told him, that a Lincolnshire bullock and a Galloway bullock, which were sent from the same village to Smithfield at the same time, both sold for the same money, though the Scot was only half the other's weight: but as the weights he has given are those of many of the Lincolnshire bullocks, there may be some mistake.

The cows of this kind are said to be good milkers, which is a most valuable property in all cattle; and produce much butter from a given quantity of milk.

KYLOES, or Scotch cattle.—This breed, in colour, is chiefly black, with frequently large horns, thick and long, and of great value, as will hereafter appear. Some are brindled, others red, blue, &c. with not much white; and there are some very fattening and well-shaped. While I resided at Doncaster, I made several trials of

this breed of cows, by purchasing them in calf, fattening the calf, and then milking the cow. Before I mention what progress they made, it will be right to observe, I bought the best in a drove, one or two at a time, out of some hundreds. The first I purchased, a black heifer, being the largest, made the greatest profit: I kept her about nine months, and she, for her size, gave much milk—about twelve quarts a day for two months, and then declined progressively to about six: she was sold to go to Sheffield, at ten guineas (her first cost, 5*l.*), and milked the morning she left Doncaster: weighed 560lb, and had much fat within. Another I had, which was red, cost five guineas; her calf was made fat, and sold for one guinea: she was milked for a year, giving about nine quarts of milk a day for three months, and then gradually declining to about five: she was dried, and kept three months on grass and grains, but the last six weeks she had cauliflowers, nearly as many as she would eat. This was the completest Scotch cow I ever saw; so handsome, that Sir John Sinclair wished to have a drawing of her, but I could not meet with a proper artist. I sold her for sixteen guineas: she then weighed 504lb, loose fat 112lb, and was allowed to be the handsomest carcase ever seen; and the beef is still spoken of, by persons who ate it, as being of the finest flavour: every part was beautifully marbled, rich, and well tasted. Part of this excellence I attribute to the cauliflowers.

I have mentioned this circumstance the more particularly, as Mr. Culley has allowed these cattle to be well-flavoured, fine grained, and mixed or marbled, but not handsome on the outside; so that it would seem there is no general rule without an exception. I bought another cow at the same time, for the same money, which proved so good a milker, that a neighbour gave me 10*l.* for her in the milking state. But it must be ob-

served, these cows when purchased were very poor, and no cows could be kept better, having as many grains as they would eat, fresh twice or three times a week, and fine grass in a piece of very rich feeding land.

When I first bought these Scotch cows, I expected the milk to be much richer than that of the Yorkshire breed; but I was highly disappointed, for we could neither see nor taste the smallest difference. We then set it up, creamed it, and churned it by itself; but still there was no material difference. Now, although the former cow paid money, the Yorkshire paid much better, as I had some of them kept in the same pasture, and in the winter both fed on grains and hay: the Yorkshire cows all gave considerably more milk, and some of them double the quantity, while the Scotch cows ate in proportion to the Yorkshire cows as four is to five. My practice was to sell all the cows fat, and milk them: none of the Yorkshire cows got so fat in a correspondent time as the Scotch cows, but their milk alone more than compensated.

From every experiment I have tried as to quality of milk, it appears to be mere chance. It is commonly asserted, that when cows give much milk, it is constantly thin; and I believe the assertion may be often true: but the quantity does not always impair the quality: for I had one cow that gave thirty-six quarts a day for some time after she calved, and a very large proportion till near the time of her calving again; and her milk was the richest I ever had: I took her to America; and in her way to Liverpool, going across the moors, where she stopped at night, the people had her to milk night and morning, and they all perceived the milk to be uncommonly rich. I think the nature of these small cows, when they are high fed, and consequently give much more milk than they would on their native soil, is

in some measure changed; but their milk becomes thinner in proportion as they are forced by keep—or at least I have found it so, with only one exception.

Most persons are of opinion that small animals feed the quickest; but I have not found that to be the case: they will feed on much weaker land. I think, from every observation I have made on these small Scotch cattle, they will fatten better in gentlemen's parks, where there is a spacious range, good spring water, &c. than in confined pastures of rich land, in low situations: I have seen some of them put on very luxuriant pasturage in the Lincolnshire marshes, and make but very poor progress; and I have seen others do wonders on high land, where there was nothing but rough grass, and especially when they had been out all the winter. These small Scots are of the greatest value in woods, or on any sort of coarse land: in the winter, they will live upon very little, where other kinds of cattle would starve; and in the spring, as soon as ever grass begins to appear, before the eye can well perceive it, they will fatten. By being of so small a size, and having less lean, they of course require less fat to match it, and consequently are ready for the shambles much sooner than a larger animal, and that at a season of the year when beef is scarce; and in June and July, when the weather is hot, and meat will not keep, the butcher can probably sell one of these small bullocks while it is good, when, were he to purchase a large one, he would perhaps lose half of it, if he even buy it by quarters: as his customers will then want less cuts, with a small animal he can suit them much better than with one that is large. Although no man is a stronger advocate for large animals, of a good kind, than myself, yet circumstances alter cases; and it is the business of every man in trade to keep such goods as his customers require; therefore, the

butcher being the grazier's customer, it is necessary he should provide small cattle in the fore part of the summer, to suit the butcher's customers at that time; and in winter, when meat will keep, provide large beasts, in which there is more profit at that season, while small cattle are more profitable in hot weather. I have before observed, that Mr. Culley mentions a small Scotch ox, only half the weight of another, being sold for the same money; as the season of the year is not stated, nothing can be inferred from the information: if the large ox was fat, and sent up at Christmas time, let the Scot be ever so good a cutter, the former would fetch nearly as much per pound; but he would not in the month of June.

These cattle have thick hides, at least thicker than many kinds, and much hair, with which nature seems to have furnished them as a protection in high, bleak, cold situations. Their colour is black, which is another indication of hardiness; and their small size denotes being raised on poor food: their weight is from 280 to 490lb, and some, well fed, 560lb. An almost general opinion is entertained by critics, and theoretic writers, that two of these small animals may be fattened on the same quantity of food as one common-sized bullock; but this I have found totally fallacious. When I began these experiments, I was prepossessed in favour of the general report, not doubting its authenticity, and my different trials were made with a view to substantiate the fact; but the result proved so far to the contrary, that the small beasts ate in the proportion, as I have before noticed, of only one fourth less than the large: and the small bullock will make himself shambles beef, on good grass, in about two months; when the common-sized bullocks take four months, and some even more. But if the pastures were stocked with small bullocks, and all sold at the end of

two months, and the grazier had fresh stock to buy, he would be troubled at that season to meet with cattle of the same kind; and if he could obtain them, he would not find the small bullock to pay so well from June to October, a period of three months, as at that time of the year grass is not so fattening as in the spring, for very obvious reasons.—Grass in the spring being short, is naturally more fattening; and it will always be found, that short, fruitful grass, at all seasons of the year, will prove more nutritive than long; while pastures that have been fed with cattle for two months, in the fore part of summer, will, from the cattle which have pastured there dropping their dung and urine, treading, &c. be so foiled, as not to recover its natural sweetness again until the next spring: nor will the various fattening plants, in the middle of summer, have the same facility of growing as in the spring; there being, on the one hand, a moisture in the soil at the latter period, which, by the power of the sun, is exhaled during the hot months; and on the other, the plants imbibed the rain and dews that fall, which is the cause of land being said to burn. Therefore, for these reasons simply, the second stock, put on the land in July, will take three months to attain equal perfection to that they would acquire during two in the spring. Again, beef becoming more plentiful in the autumn, and keeping better, what the small animal has gained by the feed in July, August, and September, will not pay in the same ratio it did for the two spring months. Now, if the grazier has a proportion of small cattle for the supply of his customers—and, although they pass various hands, before they come to the consumer, still the consumer is his last customer—and an adequate number of larger cattle to bring to market, as the weather gets cooler, and when shambles meat will keep, he will find an uniform benefit to himself, and have

constantly a proper supply for his customers;—which I have proved by many trials and experiments. An animal eats somewhat less when he has got into a fattening state, than he did for the first ten or fourteen days, after which time he becomes pretty regular; though the difference is not so great as I expected. I found one thing very material, which is, he pays more money for what he does eat after that time, as he gains weight much faster; and it is a kind of gain that is beneficial to all parties, for his bone was as heavy, or nearly so, at the time he began to fatten, as it will be when he is made extraordinary shambles beef; consequently, the consumer has a much less proportion of waste, or offal, in each weigh of an animal made properly fat, than he would have had if it were only half fat:—this is the reason why small animals have more offal than those that are large, which will be fully shewn in this work.

Before I leave this subject, I have one thing further to observe.—It has been the general opinion, that small animals take less time to fatten than large ones, which I have allowed; but that circumstance does not arise from their fattening quicker, but from their requiring less fat to be in an equal proportion to their lean, having much less lean about them at the time they are put to feed. But, proportioning the weight gained to the food eaten—saying, so many stones of food to so many pounds of shambles meat, which, after a certain time, is chiefly fat—I have found that a small animal takes as much time with very few exceptions, as one that is large: the Scotch cow which I made very fat, and was so much admired, took as long time as a good fattening cow of twice the weight would have required. The fattening of animals is like winding a clew of thread;—as the clew becomes larger it takes a longer thread to go round, and conse-

quently gains weight faster: so it is in a large animal;—as he is of greater compass, and every part of him increases in the same ratio as the small one, he, of course, gains weight more rapidly.

Mr. Culley gives an account of one of these Kyloe Scots, which he says weighed 1410½lb: this seems admirable; but as the dimensions are not stated, it cannot be known whether the animal grew to the size in height and thickness, or in thickness only. Mr. C. has given a sort of history of these cattle, where to be found, how bred, &c. those persons, therefore, who wish for information on this head, I would refer to his book, from page 59 to 65, and from page 67 to 72. I have seen some oxen, brought from Scotland—black, with white faces, and some red ones—of a very good form; the jobbers told me they came out of Fifeshire; I bid money for two remarkably large: they were brought somewhere into the south, and I saw an account of them in the newspapers: they made a very great increase, and attained an amazing weight.

Mr. Culley mentions a cross, taken by some Scotch breeders—Galloway cows with Mr. Bakewell's bulls: I have seen some, heifers chiefly, pass through Doncaster, which I imagine to be so descended. They were very complete; and I got a jobber to bring me one of what he thought the best: she was handsome, and fattened well, but not superior to the Scots before mentioned; and I have had some half-horned, in England, that were preferable: she paid no more than is common. I bought a cow at York, of the half-horned kind, which cost 11*l.* with her calf, in the month of May; the calf sold for 21*s.* at a week old: I milked her till Christmas, and then gave her hay and turnips till the 5th of April, when she sold for 23*l.*; the time of fattening being 101 days. Supposing the milk only to pay for her food (though it paid a

great deal more, as she milked well about two months before she began fattening), this cow returned, for hay and turnips, 2*s.* 7*d.* a day, or 18*s.* 1*d.* per week: she was one of the best half-horns, or cows of any kind, I ever possessed. I am persuaded my father has had oxen so bred that would have equalled this cow, if they had been tried. The first disagreeable beef I ever saw, was that of two oxen of my father's, which were winter fed at hay, and killed on the Saturday before Shrove-tuesday: it was a remarkable time, being during the great snow, which lasted eighteen days, in the year 1762; but, notwithstanding the weather was so severe, the fat never set, running like oil, to the astonishment of every person; the cause of which I now well know. Although working oxen—carting the dung to the turnip land in June, and drawing in a waggon during the hay and corn harvest—pastured on land at that time only 8*s.* an acre, and kept in the straw-fold the winter before, yet were they always fat; and, with no better food, when killed, the beef was scarcely eatable: which convinces me that it is not merely the richness of food we ought to consider; but likewise the length of time kept—as they were put in a fold of the description before mentioned, to hay only, about Martinmas, and killed in February, being about 100 days, or fourteen weeks, fattening. I mention this circumstance, because it is doubtful to me whether there are cattle of so fattening a kind in this supposed improved age; and to shew that oxen may be worked to advantage in leading dung, carting hay, and all odd jobs in the farm. Those oxen of my father's seldom ploughed, but often harrowed, in what was called an ox-harrow, by way of treading old sward land newly ploughed up, or on clover ley for wheat: the soil was a remarkably strong sour clay; and there was no mildew or wire-worm, and seldom any root-welting, chiefly prevented by the treading. In my

new "EXPERIENCED FARMER," vol. II, page 106, my opinion on harvesting hay may be seen, in substantiation of the fact, that hay is more fattening harvested in the way prescribed; and in this work I have proved that cattle fatten better in folds than in houses. The hay, and fold-yard, I know to be better; but I cannot be certain as to the cattle, for their proving so costly in winter feeding may have arisen from improper treatment. All my father's cattle were not equal to those above mentioned, which were a cross, spoken of elsewhere: he bought about three fourths of the cattle he fattened, and many of them must have been of a very common kind; but I never knew him give any thing besides hay in the winter: he regularly put them to hay at Martinmas, and I do not remember he ever had one remaining at May-day in my time; they frequently went off in February and March. I have been the more particular in speaking of the cross, in consequence of Mr. Culley having expressed his doubts as to its propriety; and of which I am, in this work, bold enough to be the advocate. In commendation of it, I have given one or two cases, but I could quote fifty:—even at the time of the Smithfield show, Captain Pell of Tupham, a Lincolnshire ox: a grisseled heifer, shewn as a sight; a half-horn, bought a suckler at Smithfield, &c. &c.

SHETLAND cattle.—Those I have seen were much smaller than any before mentioned. A nobleman in the neighbourhood of Doncaster, having got half a dozen heifers of this kind, very diminutive, but very handsome, did me the favour to sell me one, with a calf by her side; she was then four years old: I fattened the calf, it being a most curious animal; and at six weeks old sold it to the butcher for 12*s*. The cow I milked during the summer and winter; and then she was dried, some time before May, and put to feed: she was at that

time in high condition ; having been kept the summer before on grains and a piece of very rich pasture land, in the winter on grains and hay, and that summer on grains and good grass: the result was, when killed, on the 16th of September, the carcase weighed 224lb, the loose fat 56lb. Now, this small cow had been 145 days, or twenty weeks and five days, fattening, on much better food than was given to the oxen I have spoken of as weighing, one 980lb, the other 1050lb, and that in a shorter time, and a more unfavourable season: which corroborates my assertion, that small animals, to make them what may be said thoroughly fat, take as long a time, in proportion, as larger. These cows were short legged, long in the carcase, of a yellow colour, with brown, brindled, or mottled faces, and good hides; indeed, every thing in form and appearance to recommend them as proper grazing cattle, but want of size. My cow milked well according to her size, giving about four quarts a day, and stood her milk remarkably well: she died an uncommonly good carcase of beef: but, with all these qualifications, she wanted the material one—weight. She cost, with her calf, 3*l.* 10*s.*; and she was sold at 5*l.* 10*s.*, the calf at 12*s.*, making together 6*l.* 2*s.*: in food she consumed some little more than as six is to four of the Yorkshire cows. It may be seen that I bought a cow, with a calf by her side, of the large kind, on the 18th of June, and her calf weighed 280lb; sold for six guineas; made 8*l.* 19*s.* 6*d.* to the butcher: these two cows fed on the same pasture, and at the same time, having every thing alike: the difference in profit was very material, entirely from want of size ; for the small cow was of a much better form than the other, being admired for her beauty.

IRISH cattle.—These cattle in colour mostly resemble the Lancashire, and the large sort, and some of the small ones, in their horns; but there is a breed in the

county of Connaught, which, though in colour the same as the other, in shape and horns varies materially: the horns are not so long, and many of them turn up; they are shorter in the leg, and generally shorter in the carcase, with round but thick bodies; all their upper parts are heavy and wide, with good hides, and a superior aptitude to fatten to any other in the country, or in many parts of the united kingdoms. I had seventy-two of them when I lived at Slane, about thirty of which I kept to breed from; and there were two of the breeding cows, in particular, as quick feeders as any I ever experienced without a cross—the best I have had having been produced by crossing. Mr. Culley is of opinion, they are a cross with the Welsh or Scotch: I give him great credit for the observation, as they are very likely to be so descended, and it strengthens my recommendation of a proper cross; which, from a bull of the large sort of long-horns, much in the form of the large Lancashire cattle, with Welsh or Scotch cows, may certainly be obtained; for some of the Irish cattle are very large and long in the carcase, with long thick horns, and thick hides, with much curled hair upon them; they are a very coarse animal, but remarkably large, of equal size to any long-horns I ever saw in England, Mr. Princep's excepted.

There is a small kind of cattle in the north of Ireland, resembling in every respect the large sort, except in size, and it appears to me they are of the same breed, but have become smaller from poor keep. They are perhaps as bad a sort as I ever saw:—large bones, thick hides, many with much curled hair, large clumsy heads, much dewlap, very coarse in the pizzle, light in the carcase; in fact, they have almost every defect that cattle can possess, to render them unworthy of notice, except a thin hide: but a thick hide, although of value, does not indicate an aptitude to fatten. I saw an experiment

tried with nineteen, which were purchased in the last week of April, and put on as good fattening pasture as most in England; they continued there the whole of the summer, and at the end were sold in nearly the same state as when bought: or at least so little improved, that the gentleman grazier said they did not clear 10*s.* a head. To shew the disparity of cattle, the next summer the same pasture was stocked with the large Yorkshire cows, nineteen in number, the same as before; and every cow made herself nearly double the weight of the Irish oxen; one in particular, which cost 8*l.* in the first week in May, in the first week in July was sold for 17*l.* This grazier's custom was, to stock his pasture with the largest cows he could buy of a good sort, some long-horns and some short-horns, but mostly short-horns, which critics will not allow to be quick feeders; but he generally sold more than half of them fat before the 5th of August, as there was a fair at Doncaster, where the Sheffield butchers used to attend, and they sometimes cleared the pasture. The above is a further confirmation of my experiments to prove that small and large animals eat nearly alike; for the small Irish oxen consumed as much food as the large Yorkshire cows, the pasture being eaten up in the same ratio by each; and it likewise shews the impropriety of endeavouring to breed or introduce small cattle on good land, or large animals on poor keep. If those small oxen are of the same breed as the large ones originally, and the size be reduced by being poorly kept from time to time, and by being stunted in their youth, they retain their large bones and coarse features; but I am clearly of opinion, that if large Irish bullocks had been put in the pasture I have just mentioned, they would have made themselves good shambles beef; as I have, during the time I was in Ireland, seen many of

them exhibited at fairs, shows, &c. and, although they were not of the best kind for fattening, they were much better than the small cattle, all having similar features, with every appearance of being of the same species.

From these observations, and many others recorded in this work, the necessity of every breeder duly considering what sort of animal his farm or situation will properly support, must appear evident; as well as the impropriety of attempting to breed large animals on land that will only support small ones, and letting them get less and less, until they are reduced to the size nature has intended the land to sustain. I have not the least reason to believe that the size of the animal determines whether or not they be of an aptitude to fatten; but where the food is proper for large animals, I should certainly prefer them, with the few exceptions I have already mentioned, as I have continually seen, by my own experiments and those of others, that the larger animal always pays the most money. I would further remark, it is my candid opinion, that, could it be ascertained, in the number of small animals of every description there are as many deficient in fattening, as in an equal number of large ones; —there are many good, and many bad, of both kinds. As I am anxious to be clearly understood on this point, I will endeavour to elucidate it by the following case:— Suppose a small ox, Scotch, Welsh, or any other kind, and of the best sort for fattening, had been brought up by the side of the large Yorkshire ox that made himself so fat, from the time they were calves, I ask, would any one of the former, not weighing more than half the weight of the latter, have exceeded him in fatness? on the contrary, had the Yorkshire ox been put by the side of the Scotch ox from the same period, I am clear he would never have attained to the perfection he did:

therefore I think, where extraordinarily good keep is given to small animals intended for store-stock in their early stage of life, it is an unprofitable proceeding.

Irish cows, of every kind, seem to give but a small quantity of milk compared with some English breeds. We had at Slane several of the large sort, and some of the Connaught breed, and having a woman from Cheshire to milk, she could form a good idea of their value: she did not deem them either good or bad, but middling; the milk of rich quality, according to the quantity; the cheese richer in quality than in Cheshire, with the same ratio of cream; and the butter as good as in any country. Some of our labourers had cows of the small kind, much better milkers than fatteners; which strengthens my opinion, and that of some cow-keepers in London, that loose skin denotes a cow to be a good milker, as the veins are sure to be strong. I have remarked in the common Irish cattle, that their horns are neither short nor long, like the Connaught breed, but rather spread. The calves which I reared, with a sort of store keep, nearly attained their proof the quickest of any I ever experienced. But this early perfection, and that of giving good milk, may arise in part from the kind of pasture, as the Irish grass is, from the humidity of the country, of the first quality for cattle: it is much softer than the grass in England, generally speaking. The weights of the cattle are extremely variable: the large long-horned oxen, the best 1400lb; the Connaught 980lb; and the bad, small kind, from 420 to 700lb.

WELSH cattle.—Of these there seem to be two distinct kinds. The large sort are in colour brown, with some white on the rump and shoulders, denoting a cross from the long-horns, though in shape not the least resembling them. They are long in the legs, stand high according to their weight, thin in the thigh, rather

narrow on the chine, and tolerably straight; their horns are white, and turn upwards; they are light in flesh, and, next to the Devon, well formed for the yoke; have very good hoofs, and walk light and nimble. There are many marks about them indicating an aptitude to fatten, but it seems they do not possess that quality, as they come rather poor beef to Smithfield; in short, this large kind seems better constituted for the yoke than for the grazier. The other sort, which are called the *black cattle*, are much more valuable: their colour is black, with very little white, except the udders of some; the horns are white, and turn upwards, not long or short: they are, in a general way, of a good useful form;—short in the leg, with round, deep bodies; the hide is rather thin, with short hair: they have a lively look, and a good eye; and the bones, though not very small, are neither large nor clumsy: on the whole, these must be allowed to be a very useful cattle. The cows of this breed are considered good milkers (indeed, cows of the large kind are seldom bad milkers): the small sort have great aptitude to fatten, and are good shambles beef, very nicely marbled: in the opinion of some epicures, it is superior to the Scotch beef; though that I do not allow; it may be equal, but cannot be better. The best beasts of the large kind weigh 1000lb; the small, 700lb. There are some situations where I should prefer this small Welsh cow before a larger, as on all thin high lands: she is a good poor man's cow, and in such places affords a greater profit than the Yorkshire cow.

ALDERNEY cattle.—These seem to be a very tender species. Their colour is mostly yellow, with white or mottled faces, and white interspersed on various parts; they have short crumpled horns: their size is small, and they are of as bad a form as can possibly be described:—the bellies of many of them are four fifths of their weight;

the neck very thin, and hollow; the shoulder stands up, and is the highest part; hollow and narrow behind the shoulders; the chine is nearly without flesh; the hucks are narrow, and sharp at the ends; the rump is short; the thighs are thin; the bones small; and they are narrow and light in the brisket:—but the udder is well formed, so are the paps; and the milk is said to be rich, which it ought, as they give but a small quantity, according to the food they consume. Of this last property I have made no trial; but a neighbour of mine, for two or three years past, kept one of these cows on a given space of land: last winter and this summer he has had a very large Yorkshire cow, on the same pasture, which is in much better condition than the Alderney used to be; and he informs me, he knows no difference in the food, as his paddock in the summer is equally divided, one half for the summer grass, the other half for hay, for the use of the cow in winter; and the small Alderney cow always consumed the whole of the produce, while the large cow does no more: as soon as the hay is got, the cow has the eddish, and the whole of the paddock during winter: no house for stall-feeding. When I asked this gentleman, if the milk was as rich from the large cow as from the small, he replied, "Oh yes! she is a *French* cow:"—so completely unacquainted is he respecting cattle: the man who sold him the cow imposed upon him, by telling him she was a real French cow. This seems a fair experiment in regard to the goodness of milk: the family has found no other difference, than in doubling the quantity. She is a large, well-formed, and complete Yorkshire cow, and if made fat, would be as heavy as three of the Alderney breed; therefore the cow-jobber has done this gentleman a real favour by deceiving him. The piece of land is of a moderately good quality.

The principal Scotch Breeds of Droving Cattle.

There are breeds of cattle in Scotland, as the Aberdeenshire, and the Angus, or Forfarshire, which are nearly as large as some in England; but those which are chiefly preferred by English purchasers are:—1. the *Galloway;* 2. the *Fife;* 3. the *Argyll;* 4. the *Kyloes,* or *Western Islanders;* and, 5. the *Norlands,* or *North country* cattle, from Inverness, Ross, Sutherland, and Caithness.

1. The GALLOWAY polled cattle are remarkable for the fineness of their shape, and facility in fattening: they are at all times easily kept on any rough grounds, such as woods and plantations, that are grown up. This proceeding with cattle I have fully tried: from the time the leaves fall, of which they are fond, beech in particular, they will not only keep themselves, but will even improve and fatten; they prefer leaves to grass of moderate goodness, and may be safely kept in such places as those above mentioned until the trees begin to vegetate, when they must be taken out: at all other times they are of service, as they actually weed the grounds, and give air to some young plants, that would, otherwise, be choaked, and smothered. There is another consideration much in favour of these cattle—their being without horns; they therefore do not get entangled with the side boughs, to which horned cattle are very liable, while the latter are apt to rub, or even play with, their horns, against the branches of trees. They may be kept in these places from September to February, that is, from twelve to sixteen weeks; and cattle so treated, especially of this kind, will fatten quicker than those kept in houses, fold-yards, &c.; as, not being made tender during the winter, there is not so great a change, nor are they so apt to have the scurvy, and rub off their hair. As this

breed of cattle is smaller than some other kinds, they do not tread and poach land, and may therefore safely be put in fattening pastures in February, to pick up the young grasses by the sides of hedges, the bottoms of dry ditches, and weeds of different descriptions, that would otherwise become a total loss by the usual time of stocking, about the 14th of May. Having mentioned this to two graziers in different counties that I surveyed, they have tried the early stocking their fattening pastures in this manner, and have both told me it has been attended with great profit, by putting in about one third of small cattle: the pastures have been eaten more regularly, kept freer from weeds, and there was not so much rough lost grass during the summer; while the small cattle, by being treated as above directed in the winter, fattened one month sooner than they used to do, and thus gave room for the remaining part of the stock, which were of a larger kind, intended for the colder months. The small cattle are more sought after during the hot months, and sell at that time to greater advantage than large cattle; and, as the former get fat early in June, one third of the stock being sold off at that period when pastures are declining in their nutritive properties, the latter have a much better chance of attaining perfection.

Those persons who have any doubts as to the leaves of trees being good food for cattle, or even what they like, may convince themselves, by observation, at the fall of the leaf, where cattle are pasturing on the best of grass, viz. eddish: it may then be seen, that cattle will greedily lick up the leaves of trees in preference; indeed, when milch cows pasture where there are trees, the butter has generally a strong disagreeable taste. The Scotch cattle are, therefore, particularly convenient and profitable on woody lands, where there is a scarcity of rough pasture; for they do not seek after dry winter provender, such as

straw, &c. but naturally prefer the open air and cold moist food: and Providence has given them a greater protection against the inclemency of weather, by having more hair and thicker hides, in proportion to their size, than most other cattle.

2. The FIFE breed is considered among the best kinds that Scotland produces. It is said to have been originally carried from England, and to have accompanied an English princess (Margaret, the wife of James IV) when she went to Falkland in Fife, which was that sovereign's favourite residence.

3. The ARGYLL is the largest of the true Highland breeds, and is much approved of by many excellent judges. The weight and the price of this breed vary according to the age and size of the animal, and the manner in which it has been reared. They are much run upon by the graziers in Yorkshire, and the other northern districts.

4. The SKYE breed, or WESTERN KYLOES.—These were much admired by Mr. Bakewell, on account of the excellence of their shape: he often wished he had begun his improvements in cattle with them; for, however small, in point of size, they are in appearance, it is not easy to credit the weight to which, by attention and good feeding, they may ultimately be brought.

Mr. Bakewell's great partiality for small animals, with good shape, led him in theory beyond profit in practice; and his ideas on offal are ill-founded. The sort of cattle he began his improvements from, when the best of the sort, as they have less offal, are more profitable to the breeder and grazier than any other kind of their size; but as Mr. Bakewell was situated on good land, no small breed could pay so well as large. In respect to size, this matter is fairly elucidated in Mr. Princep's cattle; for there are certain other men's cattle as perfect,

in shape, as his, but none so large—I mean of the same improved breeds: as to bone, Mr. Princep's are far from being small, yet have less offal to the consumer than most other cattle. The greatest part of the offal lies in the fore quarter, particularly on the shoulders; and the long-horned cattle of the improved breed have smaller shoulders, less thrown back, like as a horse ought to be, than any other breed. When I first saw Mr. Bakewell's cattle I made this remark; it was perfectly evident to me, even at that time. A short period afterwards I went to see Sir Harry Harpur's cows, which were then many in number, and of the best kinds; among them was one immediately from Dishley: having noticed her, I asked the cow-man if she were not from that place, when he said she was—a daughter of Stump's. It may be observed, the best long-horned cattle are longer in the rump, loins, and chine, than any other breeds; consequently have more fine cuts before the butcher comes to the blade bone, for then the price immediately drops from 2*d.* to 3*d.* per pound, and sometimes more, and is even difficult to sell: therefore although the shoulders of a beast are not waste, or offal, yet they are a loss; and the best-made cattle are those that are the longest, with small shoulders, in proportion to their size. Now, if Mr. Bakewell had seen greater perfections in the Skye breed than in his own, there might have been one cross thrown in, to communicate some of those good qualities; and by returning with the female offspring to the original kind, in two or three crosses the size lost would have been regained.—The Galloway Scot is the longest in the carcase, with the least shoulders, of any Scotch cattle I have remarked; and there is no necessity to destroy any country's breed by crosses, though they may be so improved.

5. The NORTHLAND cattle, from Inverness, Ross,

Sutherland, and Caithness, are also small sized. This breed is remarkable for the delicacy of their flesh, and fat; and for their meat being uncommonly well marbled. The distance from which they are driven being so great (from 300 to sometimes 400 miles, even to the borders of England), it must bring them into low condition; and consequently they require some time to recover their fatigue, after they get to their ultimate place of destination, before they begin to fatten. The price, however, is proportionably lower; and there are few breeds that pay better for the time, and sort of food they will fatten upon, than these do; as they will thrive in gentlemen's parks, or on high spacious places, that would not sufficiently fatten many other breeds of cattle; and the flesh of these cattle, so fed, is more luxurious eating than the very same cattle would be fattened on rich marsh land.

Respecting the purchase of these different breeds, it is almost impossible to buy any bullocks in the Highlands of more than three years old; but it is to be observed, that when they are young, and properly fed, they grow in size as they improve in condition—a circumstance which adds greatly to the profit of the grazier.

Note.—*Kyloes* means animals that have crossed the *kyles*, or ferries, with which the Highlands of Scotland abound. The North Country cattle are called *Norlands*, in allusion to the situation of the district from which they came.

SECTION XVI.

Remarks and Observations on different sorts of Cattle.

If the reader require information respecting the origin of cattle, how descended, and whether imported,

or originally the stock of England or any part of the united kingdoms, I would refer him to Mr. Culley's treatise, it being out of my power to give a perfect account; and I think it more an object of advantage to have a full description of the separate kinds, with a distinction of their properties and value, whether for fattening or milking, and what sorts are the most likely to be profitable for the different soils and situations; which I will endeavour to describe in so plain a manner, that the suitable cattle may readily be found, as well as bred, to serve every useful purpose.

Long-horns are best for humid climates, fertile but wet, and badly sheltered; being better protected than many others, by thick hides, and long hair: they require to range on rough pastures; which liberty causes the store cattle to grow more rapidly in their younger stage, and, when they are admitted to have grass in the winter season, to fatten more quickly in the summer. Confinement does not agree with them: nature has not intended them for houses, or fold-yards: they may be admitted into fold-yards at night, to assist in making dung, but would thrive better, if the straw were given in open fields, with thorn fences round them, or plantations:—I had sufficient experience of this practice in Ireland.

Yorkshire short-horns answer better than any other kind in houses and fold-yards: the reason seems obvious; as they are not so well protected against the cold and wet, nature having given them, generally speaking, thin hides and short hair; and many of them are of a tender colour, some being all white, others having a great proportion of that colour; while, from the enormous size they will attain, they require rich food at all times, deep, rich loamy soils, and to be well sheltered. This mode of treatment has been fully tried by the London cow-

keepers, but carried by them to an extreme; for notwithstanding these cows do thrive better than any others on high keep, hot cow-houses, and rich, hot, fattening food, appear not to be natural to them, as few thus treated thrive and milk more than three years: many of them, when so kept, will regularly decline both in flesh and milk every season; for which reason a town-fed cow is constantly rejected by the London cow-keepers, and is sold for a much less price, according to her appearance, and seeming real value, than cows immediately from the country, that have been milked by dairy-men: but heifers in their first calf are preferred. Hence it is evident that hot houses, and such forcing food, are improper for store cattle, and that hay and grass were intended by nature to preserve their health and constitution. The slaughter-men in this metropolis, with whom I have conversed, being in the habit of killing those cows, say, that even a fat cow from the London cow-keepers has generally a decay in the coat of the stomach. I had a horse that worked in a mill in my brewery for about six years, where the men, having oportunities, frequently gave him hot grains the moment the wort was off; this horse was one day seized with a trembling and sweating, and in about an hour he died: when opened, his bag, or stomach, appeared regularly wasted to the thinness of gauze, which had burst, and the food was dispersed in his body: but, what was the most singular in this horse, he was remarkably fat at the time he died—clearly shewing that hot food is improper for animals of any kind. A cow has been known to be milked by the London cow-keepers for ten years; but such a proceeding is sure to be attended with a decline in profit every year, by giving less and less milk, and nearly a total loss at last: and it is allowed, the higher they are fed, the sooner they go off. From these

observations, and my own experience, I have, under the head of "*Rearing Calves,*" recommended turning them to the hay-stacks while they are at the kit. I have observed that those men in London who deal in various animals—birds, monkeys, &c.—put them out when it rains; this shews the policy of the practice, as pouring water upon them would seem to answer every purpose; but they say, that does not afford the same sort of refreshment; and I am, therefore, of opinion, that all animals receive benefit from the open air, and by being exposed to rain and snow.

I have perhaps said enough respecting the treatment of cattle, and have particularised almost all the distinct breeds; but there are several breeding counties that have not been noticed. Numbers of cattle are bred in Lincolnshire. The breeders there, as in many other counties, vary in opinion concerning the kinds of cattle they breed; some prefer the short-horns, others long-horns, and some a cross, which seems to me frequently to produce the best;—instance captain Pell's ox, at Smithfield —a Lincolnshire ox, allowed to be the best in the show: he was a cross between a long-horned bull and a short-horned cow. At the time I had the honour to ride with the late Duke of Bedford over the Woburn farms, when he shewed me the Hereford cattle, he asked me how I thought they were descended: I replied, they had every appearance of being a mixed breed, between long and short horns; and he said, he was of the same opinion. Many instances have been known of the best and most profitable cattle being so bred; and I do think an individual advantage may be obtained by crossing—similar to the manner in which Lord Orford bred his greyhounds. Suppose a cross were taken from a long-horned bull and a short-horned cow; if the breeder were inclined to continue the long-horned breed, he might put the offspring

to a long-horned bull, for two or three times, and then breed a bull of half-horns, and put to the cows so mixed. I do not at all approve of putting a short-horned bull to a long-horned cow, unless he be an extraordinarily good beast, and very kindly fleshed; for, as the male animal communicates so much of his own nature, it would render the breed more frequently worse feeders than better. A good breed might certainly be obtained by crossing, though it seems contrary to the nature of things, and the breeds might be entirely lost by it; but I do not see where the harm would be, if a better breed were produced. Doctor de Salis told me, when I surveyed the county of Bucks, that he had heard an old gentleman farmer say, the Hereford breed originally were all red cattle—red faced, &c.; when a bull brought in from some other part, with a white face, proving a good getter, was the forerunner of this most excellent breed, which I am inclined to think, if not the best, are as good grazier's beasts as any in England: at all events, by what I could learn from the doctor, they were very much improved by the cross. In the county of Lincoln, Mr. Culley distinguishes Mr. Tindale, of Ureby near Sleaford, who breeds short-horns of a very large kind, and which he considers inferior to few in any part of the kingdom. Many of them are white, or nearly so, and resemble the Yorkshire cattle, with some little variation, rather for the better:—from the general appearance of the Yorkshire cattle, a few only excepted, there seems to be no cross in them. Mr. Tindale's cattle are rather mellower and finer in flesh than the greater part of the Yorkshire breed, which undoubtedly were at first procured from a very good short-horned kind, and perhaps by a cross.

Notwithstanding so much has been said respecting the breeds of cattle, it is the opinion of some persons that

one half of the qualifications go in at the mouth; and certainly great care and attention are necessary in raising young cattle, and in fattening them afterwards: but I will insert a remarkable instance, to shew what breed will effect, and at the same time to prove that no extraordinary progress can be made without attending to it.—The famous Yorkshire ox, bred by Mr. Richard Dunhill, of Newton near Doncaster, was from a cow bought by Mr. Dunhill for the purpose of being made fat: she proved in calf; and, near to the time she ought to have been sold, dropped this calf. When Mr. Dunhill was told what had happened, he ordered the calf to be thrown into the river; but the servant man, out of pity, put it into a stable, and the chief food he could obtain for it was pot-liquor, with now and then a small portion of milk. It was calved in September, and therefore ate very little hay the first winter; then summered in a very good pasture: the next winter some straw and a small quantity of hay, but very little attention paid to it; the following summer in the same pasture as before;—it had then attained the age of two years:—wintered entirely at straw; summered on good grass: the next winter, at straw; and, from the most correct account, he had not eaten one ton of hay at three and a half years old. With such keep and treatment he became a most amazing animal; in direct contradiction to the general opinion, and likewise to practice, as any check given when young is considered, and generally found, irrecoverable: but it may be said, there is no rule without an exception: and I think, large as he was, he must have been much larger, had he been properly supported in early life. At the time Mr. Foster of Scausby bought him for thirty-five guineas, he was three and a half years old, poor and lousy; which shews it was from breed alone he acquired his surprising

size, and great value. After Mr. Foster obtained possession of him, he put him in an orchard, covered over with spreading apple-trees, and of a poor limestone second strata;—though on good land, there is little nutriment in grass growing under trees; but the best piece of land in the farm was not fit to fatten a Scotch ox, much more an ox of 2,240lb weight. This is a convincing proof that Nature is not easily perverted in her operations. I have given this account to shew what may be expected from breed; for though, as I have before observed, many are of opinion that half the breed goes in at the mouth, no keep will raise an animal to this enormous size, if not bred to it. Attention to breed will effect wonders; and this ox strengthens my opinion as to the propriety of breeding large animals, when at a distance from market, and they are not intended for the shambles at an early age. It may be seen in the human species, that a large boy, from twelve to eighteen, will be merely skin and bone, and at the age of thirty very corpulent. This ox, it would seem, had food just sufficient to keep him. He was not a well-formed animal, but must be deemed a profitable one; as Mr. Foster, in about two years and a half, made 200 guineas of him, which was a gain of 165 guineas, at the rate of 66 guineas a year: and although the being fought for by cocks is not a fair sale, his singularity was the cause, and the profit the same. He was afterwards sold to Mr. Flint for 150 guineas: so that he paid all parties well. As a proof of the advantage of good breeding, I will give his pedigree:—he came of a large Yorkshire cow, got by a bull of Mr. Fuljam's of Aldwark, which was bred by Mr. Coats, got by a bull of his own, sire of the famous Yorkshire cow, shewn by Mr. Coats at Smithfield; and Mr. Coats sold one of the same breed, a bull, for 500 guineas at Mr. Strickland's sale.

This shews at what a distance good breed will appear, and how closely a breeder ought to attend to it, as like may be expected to get like; and it is also observable, that qualities, whether good or bad, are more particularly transmitted by the sire than by the dam.

It has been a received opinion, that large male animals are seldom good getters: Mr. Coats's old bull was the largest, fattest, and the very best, I ever saw, and it appears he has proved a good getter; nor can I conceive how such a notion should arise, for the size of an animal is, in great part, his value. If this ox had been sold as a butcher's beast, 160 stone, at 9*s.* 4*d.* a stone, would be 74*l.* 13*s.* 4*d.*; and the inside fat twenty stone, at 6*s.* a stone, 6*l.*; the hide 2*l.*; in all 82*l.* 13*s.* 4*d.*: he would have paid about 15*l.* a year, which is more than some small animals at the same age are worth. The great perfections of Mr. Day's ox and Mr. Coats's cow were in their size; for there have been many small animals as fat as them. Then the critic held out the fineness of meat, not the size, as a criterion: but this large ox, under every disadvantage, died as good a carcase of beef as any Kyloe Scot; while, about the same time, there was a small heifer, shewn in Barbican as a sight—she was a cross from an Alderney cow and an English bull, and had been greatly admired by the Leicestershire critics, and handlers, whose touch is so nice that they can feel gristle in the flesh, &c.! and by many others, from her small bone and appearance, all extolling the fineness of her flesh—which, of all the bad beef I ever saw, produced the worst: the lean was as black as that of any horse could be which had died in his blood, and the fat yellow, and ran like oil; on the whole, unsaleable; and what the butcher could do with it, I know not. This fairly convinces me, that those consummate critics know no more than other men, and that it is all guess-work with them,

as well as with me. I have at present a great opportunity to learn, as I see many beasts, both before and after they are killed. The butcher of whom I buy my meat has been a cutting butcher for forty years; he kills chiefly Scotch or Suffolk cattle, of the best kinds; and I have reason to say, no man in London eats, on the average, better beef than I do: I pass his door almost every day, and generally see it living, and dead; and I sometimes think both he and I guess right thirty-nine times out of forty. I judge as much from the appearance as by the feel; and the butcher, although he has been in the habit of cutting three or four beasts weekly for forty years, chooses them more from the sort and appearance than by the handling; he merely handles to feel for fat, not for fine flesh.

But the large ox above mentioned was the most extraordinary beast I ever saw; as he had a great head, very large bones, protuberant knee joints, a dull eye—altogether a very coarse-looking animal; without any thing to recommend him as a good carcase of beef: under all circumstances his proving so good a butcher's beast was very much out of the common course of things; for it was supposed he had lost forty stone while in London. I frequently saw him during that time, when he would not eat lintseed cake, it being the month of June; he was fed entirely upon potatoes and hay—both bad feed at that season: he would fall asleep as he stood, while eating, which is very uncommon, and sleep for some time in that posture. It was supposed that he was sore with lying, and did so for ease; but that could not be the reason, as, after he was killed, the insides of his hoofs were found to be in a state of decay—a kind of mortification. The offal being weighed, the account was as follows:—

			Price at which sold.		
	St.	*lb.*	*L.*	*s.*	*d.*
Carcase, 4*s.* 9½*d.* per stone . .	264	18	. 62	18	2½
Head	7	7	. 0	5	0
Tongue	2	2½	. 0	10	6
Heart	1	5½	. 0	5	6
Melt	1	7½			
Leg	4	0½			
Shin	2	6½			
Sticking and clod	15	1			
Fat	15	6	. 3	16	0
Hide	-	-	. 2	10	0
Tripe, feet, &c.	-	-	. 0	15	0
Fry, kidneys, and sweets . .	-	-	. 0	12	3½
Total .	*St.* 317	1½	*L.* 71	18	6

The author has here particularised the largest offal that ever has been noticed; the skin from nose end to tail end was 6 yards 8 inches—probably the largest ox ever exhibited. It is the opinion of all the butchers who saw him when he first came to London, that he would then have weighed 300 stone and upwards in carcase, which would have been near the weight of the Blackwell ox. It is extraordinary he had only 15lb of fat on one of his kidneys. His beef was very well marbled with fat, and of a good colour, and readily sold at about 5½*d.* a stone more than the market price, averaging about 4*s.* 4*d.* a stone at that time.

From the large size and coarse make of this ox, he was with difficulty sold at 60*l.* one guinea returned: the butchers, knowing he had been losing weight for some time, concluded he would die an almost unsaleable carcase; whereas, on the contrary, he was one of the best

carcases in the market, and much better proportioned with lean than over-fed animals are in common, being far superior to Mr. Day's famous Yorkshire ox, a side of which was brought from Oxford to be shewn in London about the same period, and proved scarcely saleable.

I cannot see how it would be a misfortune to a breeder if he were accidentally to drop in with a breed similar to the Yorkshire ox, Mr. Day's ox, and Mr. Coats's Yorkshire cow: if it be a misfortune, Mr. Princep's long-horns cannot be the best; as the only superiority they have over Mr. Mundy's cattle is their large size: for none can excel Mr. Mundy's breed in beauty and aptitude to fatten. Mr. Astley is another excellent breeder, whose cattle are neither so large as Mr. Princep's, nor so small as Mr. Mundy's, but between the two; and the critic is still obliged to confess that Mr. Princep's are the best: which consolidates my opinion—that the biggest, if of a good kind, are the most valuable. Now, as I wish, in this work, candidly to give all the necessary information of which I am possessed (and although I vary from the critic in some instances, I do not in all), if I wanted a bull to correct improper shape, and to give aptitude to fatten, I certainly should apply to Mr. Mundy; for when a breeder attempts too much at once—size, fashion, and aptitude, all at one time—he is likely to get wrong. Aptitude is, in my opinion, the grand desideratum, and ought to be the first object of the breeder's pursuit; and I am not certain that aptitude would not be as easily obtained in large as in some small animals: for since I saw Mr. Princep's cattle, my mind has been wavering. Very early in life, I was in Craven and Lancashire, in quest of a bull; in the first of which places I saw some cattle much resembling Mr. Mundy's, and in Lancashire I met with some similiar to Mr. Prin-

cep's: the Craven cattle were much the completest and fattest; the Lancashire, the largest, not so handsome, many of them having a fall or hollow at the back of the shoulder, and seeming not so broad in the chine, but much longer than the Craven, and particularly in their rumps, which is a most excellent point. When I was at Mr. Princep's, his best bull coming out of the house, I discovered him to be of the Lancashire breed by his length, as he passed the doorway: I immediately said to Mr. Princep, "These were originally Lancashire cattle;" he replied, they were, bred by Mr. Fenwick. The bull I bought at the time I was in that county was bred by Mr. Fenwick; and Mr. Princep's best bull bore so striking a likeness to him, that it struck me at the moment. I was pursuaded to purchase that bull rather contrary to my own inclination, wishing to prefer a Craven bull; but I was a very young grazier at the time, about the age of eighteen: I had an old jobber with me, belonging to the county, who knew all the breeders, and I think I saw upwards of sixty bulls during the time I was there. The bull I purchased seemed, as I thought at the time, to be long and tethery, a sort I was afraid would not readily get fat; nor was I ever satisfied in my choice until I had Mr. Princep's cattle. Some of the offspring were, as I expected, very fine, grand lookjng cattle, but they did not readily fatten, nor did they lay on their fat in so regular a manner, being patchy; but he was nevertheless a good getter. The first he got was a heifer, out of a short-horned cow, which my father had bought for the purpose of milking, rather than for breed, being indifferently shaped: the heifer, at the age of two years, happening to lame herself in the tiffling joint, and being thought incurable, was killed, and cut up in separate weighs to 686 lb, after having been kept only as a store; which was uncommon

proof for the age: she would have produced at this time, at 8*d.* a pound, 22*l.* 17*s.* 4*d.*; the offal, at least, worth 3*l.*; in all 25*l.* 17*s.* 4*d.* I have, therefore, my doubts, whether size and aptitude ought not to be more particularly attended to, than small bone and correct symmetry, as it appears to me that length must give weight, and is consequently desirable. Mr. Princep told an anecdote when I was with him, on my observing the remarkable length of his cattle: he said, he was one day shewing them to a gentleman, who, as the man was turning the best bull out of the house, exclaimed in astonishment, "When will *all* your bull be out!"

This anecdote brought to my recollection a remark make by a gentleman at Alford market, where my father, or some of the family, always attended weekly: I happened to be there, and as I had been in the county of Lancashire, and in Craven, the farmers were making many enquiries respecting different matters; among the rest one farmer asked, "What is this bull, that is so generally attracting?" on which another farmer present, who had seen him, having a walking-stick in his hand nearly four feet long, immediately replied, "His rump is as long as this stick!" These observations serve to shew, that probably one of the greatest excellences in Mr. Princep's cattle is their length, with smallness in their shoulders, giving so many fine cuts along their upper parts. But Mr. Princep's cows are remarkably fat; so much so, that I think if half a dozen of them were put in at the Smithfield show in their milking state, there would be very few of the cattle exhibited, and made up for that purpose, that would equally attract the eyes of the public. If Mr. Princep's cattle are rendered as fat as Mr. Mundy's with the same keep, they must be doubly superior: and, from my own opinion and experience, I have not the least doubt but they are; as, among my own cattle, and

those of other people, I have pretty generally seen the largest, of the same year and kind, in the best condition. I have been led by general opinion to suspect that Mr. Mundy's cattle are more fattening than Mr. Princep's: yet I have no right from my own view to think so; for at the time I saw them, part of Mr. Mundy's cows, though in much better keep than Mr. Princep's, were not so fat;—how they had been treated during the summer I could not tell. There was one thing which prejudiced my mind much in favour of Mr. Mundy's cattle, viz. it was in the month of September that I visited his farm, and his park lying very conveniently situated for the inhabitants of Derby, he permits them to pasture their cows in it; I think the number seemed to be about eighty; and as they probably belonged to half as many different people, without doubt bought of jobbers, cow by cow, and from various parts of the kingdom, it seems almost impossible the whole mass of these cows could be selected of a bad kind; and as, at least, many of them had grazed in the park all the summer, they had had a proper time to fatten, but there was not a single cow in the whole number that had the least pretensions to fat: while Mr. Munday had some of his own cows pasturing among them, many of which were fatter than a single cow could be found to be on some market days in Smithfield. I do not know a better trial, as an experiment, could be made, to shew the great perfections of his own cattle. I particularly mention this gentleman's cattle, not only to convince my readers of their perfection, but to acquaint them where the best breed of cattle for fattening are to be obtained. Mr. Munday mentioned a circumstance, of one of his dairy cows giving 14lb of butter in one week, in a trial against a neighbour's cow: which is to me somewhat extraordinary, as it is contrary

to the general opinion respecting this kind of cows, or almost any other, with such aptitude to fatten.

At the time I viewed Mr. Princep's, Mr. Mundy's, and Mr. Astley's dairies of cows, I inspected many others in the neighbouring parts, which were rather inferior; but, to do the dairymen justice, they have the most valuable lots of cows thereabouts, of any part of the kingdom I ever visited: the names are too numerous to mention in this work. I saw Mr. Cox's cow-dairy, and a very fine show bull; and Mr. Honeyborn's famed bull; both of which were very fat, but not equal in size to Mr. Princep's: Mr. Astley had some young bulls, very promising: Mr. Knowles shewed a very good bull. I mention these gentlemen, as being capital breeders.

I cannot close this section, without setting forth some of the valuable perfections of the Yorkshire cow, which I think the most valuable of all others, where land is suitable to raise them; her superiority in giving large quantities of milk, and standing the London cow-houses and hot food, is scarcely to be estimated. It may not be improper to forewarn the reader, that different trials have been made by the London cow-keepers of other breeds, and they none of them will stand the London treatment, especially the last valuable breeds; for although the aptitude of the latter is so very great with open air, and they will even stand country cow-houses tolerably well, by giving them hay, cabbages, turnips, &c. yet where trials have been made in London, from their thick hides, long hair, and a constitution that requires a cool and humid atmosphere, they very readily lose their flesh; the skin cleaves to the ribs, and is not to be freed by any means till the spring grass comes on. Now, in the town and vicinity of London, what a difference would it make, supposing the Yorkshire cow to

give double the quantity of milk of many other esteemed breeds! and I am clearly of opinion she does on the average, and one out of four fatten at the same time. If the cow-keeper only gets a fair living profit from the superior quantity of milk these cows give, he would require more than double the number of any other breed for the same purpose, and must consequently double the price to his customers: while the capital laid out would be considerably more, to which add the interest of money expended in buying two cows instead of one, the greater loss in stock, not fattening at the time they are milking, going much longer dry between the times of calving, much waste food and loss of time, together with the great difference in the value of the carcase, and the disadvantages appear insurmountable. It is not uncommon for a Yorkshire cow to return nearly the price she cost, after being milked six, nine, and sometimes twelve months, or two years: and I have known an instance of a cow milking even three years, and then selling at an advanced price. Mr. Wellan bought a polled cow at the high price of 35*l.*, milked her three years, and then sold her for 48*l.* Heifers of this breed, at the age of three years, are commonly sold in lots of the best kind, at from 25*l.* to 28*l.* each: the oxen are sold at less per pound than any other kind, and are treated with contempt; but they supply a valuable consumption in the navy; and I heard a captain of a merchant ship say, that he had frequently victualed at Cork in Ireland, and other ports, but never met with any beef equal to English beef, as no other took salt so well, nor any place equal to London, and he always found the largest beef the best. Therefore, these oxen being of so superior a size, although sold at low prices, I question if any kind of cattle average so much money at the same age; the heifers and oxen together pay more to the breeder and grazier for what

they consume, than any other breed. It may be proper to mention what they do before they reach Smithfield:—the greater part are bred from three to four hundred miles from London; at the age of three or four years they come to Lincoln, Boston, and other fairs in that county, and are then driven twenty or thirty miles to the marshes; they, therefore, seldom travel less than one hundred and fifty miles in the spring, to the grazier's pasture, which at that age must necessarily cut them up, and they must be some time before they entirely recover their feet again; that being about May, in about three months they begin to come to market, when they have an equal distance to travel to London, and must consequently lose much of their fat, especially as so little time has been given them to feed; thus, considering the many disadvantages under which they labour, they must be deemed a profitable sort of cattle: all other kinds of large cattle are nearer market and almost all of the English breeds kept to greater ages.

The Hereford oxen are the first in esteem, and probably merit it, but they encounter few of the disadvantages to which the Yorkshire cattle are exposed: their journey is short, not more altogether than a hundred miles, and that travelled at twice, coming forty or fifty miles to the grazier, by whom, when fattened, they are sent to Smithfield, generally about five or six years old. The Sussex are somewhat similar, but, from their appearance, of greater age—from six to seven; but on the average, I think, there are no oxen brought to London so complete, there being few bad ones among them. The Devon travel further than either of the two preceding, but not so far as the Yorkshire; and are, in general, lighter cattle, and made for travelling, or they seem to be younger. Of the long-horned Leicester there is seldom an ox to be seen. There are some long-horned Irish,

and Lancashire: these sorts come young, and when fat, which does not often happen, they are said to be as good butcher's beasts as any that stand on Smithfield stones. As to cows, there is scarcely a fat cow to be seen of either of the three last-mentioned kinds; there seems not to be any English breed so frequently brought to Smithfield as the Yorkshire. Scotch cattle come very great distances, but generally arrive against the winter, and are consequently well rested before they are put to grass.

Thus I have endeavoured fully to explain the dispositions and various qualities of all the most useful cattle bred and fed in England, and the purposes for which they are the best adapted; as also to shew where they are to be found, and the separate situations suited to the different kinds. In most cases, the richer the land the larger the cattle, even near market; as Mr. Westcar, one of the most respectable graziers near London, and in the highest fame, grazes the largest Hereford oxen in preference to small ones, doubtless finding them more profitable: it therefore seems proper only to fatten smaller cattle as land declines in value. And although I recommend small cattle on many sorts of land, I do not think them proper for winter feed, as I am clear that large cattle are the best suited to that season. An ox of 1400lb weight requires no more looking after than one of 700lb; and all winter-fed oxen ought to be brought to market before hot weather. But when those large animals come to the consumer, the offal is commonly started as an objection by all critics; though that is only theoretical, as is clearly shewn in this work, by some correct experiments, in which, with very few exceptions, small animals have been proved to have more offal than those of the larger kinds: and although it is an almost general opinion that small fat oxen find quicker sale than large ones, I have seen no difference on that head; for a com-

pletely fat one, let his size be what it may, is readily sold in London:—but this idea may have arisen from there being so few large fat oxen in comparison with the small cattle, as there is much more poor than rich land.

To support my opinion in favour of large cattle, I will give the weights of some that have engaged observation.

Mr. Culley, in page 48 to 51 of his treatise, gives the following correct accounts.—

"These oxen [the short-horned breed] commonly weigh from 60 to 100 stone (14lb to the stone), and they have several times been fed to 120, 130, and some particular ones to upwards of 150 stone, the four quarters only.—Mr. Hill, of Blackwell, near Darlington, in the county of Durham, in December, 1779, had an ox killed, rising six years old, of his own breeding and feeding, the particulars of his weight, &c. are as under:

	st.	lbs.		L.	s.	d.	*Present value.*	L.	s.	d.
Two fore quarters	75	7	at 4s. per st.	15	2	0	at 9s. 2d. a st.	34	12	1
Hind ditto . .	76	3	at 5s. ditto	19	1	0	or 8¾d. per lb.	34	18	7½
Wt. of whole car.	151	10		34	3	0		69	10	8½
Tallow . . .	11	0	at 4s. ditto .	2	4	0	at 9s. 4d. a st.	5	2	8
Hide	9	0	at 4s. ditto .	1	16	0	at 6s. 3d. ditto	2	16	3
Total .	171	10	Value .	38	3	0	Total .	77	9	7½

"Two oxen, bred and fed by Sir Henry Grey, Bart. of Howick, in Northumberland, seven years old, were killed in March, 1787, and weighed as follows:—

"The RED OX.

	st.	lbs.		L.	s.	d.	*Present value.*	L.	s.	d.
Two fore quarters	82	2	at 4s. per st.	16	8	6	at 9s. 2d. st.	37	13	0½
Hind ditto . .	70	2	at 5s. ditto .	17	12	6		32	2	11½
Wt. of whole car.	152	9		34	1	0		69	16	0½
Tallow . . .	16	7	at 4s. ditto .	3	6	0	at 9s. 4d. a st.	7	17	8
Hide	9	2	at 4s. ditto .	1	16	6	at 6s. 3d. ditto	2	17	2
Total .	178	4	Value .	59	3	6	Total .	80	11	9½

"MOTTLED OX.

	st.	lbs.		L.	s.	d.	*Present Value.*	L.	s.	d.
Two fore quarters	80	7½	at 4s. per st.	16	2	2	at 9s. 2d. a st.	36	17	11
Hind ditto . .	72	0½	at 5s. ditto	18	0	2		33	0	4
Wt of whole car.	152	8		34	2	4		69	18	3
Tallow . . .	16	0	at 4s. ditto	3	4	0	at 9s. 4d. ditto	7	9	4
Hide	9	11	at 4s. ditto	1	19	2	at 6s. 3d. ditto	3	1	0
Total .	178	5	Value .	39	5	6	Total . .	80	8	7

"An ox, five years old, bred and fed by Mr. Milbanks, of Barningham, in Yorkshire, was killed at Barnard-castle, in April, 1789, by Mr. Lonsdale;—his

	st.	lbs.		L.	s.	d.	*Present Value.*	L.	s.	d.
Two fore quarters	74	8½	at 4s. per st.	14	18	5	at 9s. 2d. a st.	34	4	0
Hind ditto . .	75	10	at 5s. ditto	18	18	7		34	14	2
Wt. of whole car.	150	4½		33	17	0		68	18	2
Tallow . . .	16	0	at 4s. ditto	3	4	0	at 9s. 4d. ditto	7	9	4
Hide	10	11	at 4s. ditto	2	3	0	at 6s. 3d. ditto	3	7	3½
Total .	177	1½	Value .	39	4	0	Total . .	79	14	9½

"From the above statement it appears, that the Barningham ox, at five years old, was of equal value with the others at six and seven.

"The heaviest females of this breed of cattle that have come to our knowledge, were,

"A *cow*, bred by William Smith, Esq. of Togston, Northumberland—

	st.	lbs.	*Present Value.*	L.	s.	d.
Two fore quarters	65	4	at 9s. 8d. per stone	29	18	6
Hind ditto	62	7		28	13	0
Weight of carcase	127	11		58	11	6
Tallow	15	12	. . . . .	7	7	4
Hide	6	8	. . . . .	2	1	0½
Total	150	3	Total	67	19	10½

" A *spayed heifer*, six years old, bred and fed by Sir Henry Grey, Bart. the carcase of which weighed 132 st. 6 lb."

A short-horned heifer, bred and fed at Boynton, by the late Sir George Strickland, Bart. which has been so much admired by the best of judges, was killed on Wednesday, the 27th of May, 1808, at Kilham, Cumberland. When living, her measurements were as follow:—Length from the horn to the top of the tail 7 feet 4 inches; height from the ground to the point of the breast 1 foot 6 inches; thence to the top of the shoulders 3 feet 1 inch; width across the hips 2 feet 7 inches; girth round the first rib 9 feet 10 inches; ditto round the flank 8 feet 2 inches; ditto behind the arms 8 feet 7 inches; ditto of the fore leg 7½ inches.

Weight when dead.

	st.	lbs.		st.	lbs.
Fore quarters	25	3½	Blood and entrails	11	19
Ditto	25	0	Heart and liver	2	5
Hind quarter	23	4½	Head and tongue	2	11
Ditto	23	7	Feet	1	7
	97	1	Hide and horns	5	2
	38	1	Tallow	14	1
				38	1
Whole weight	135	2			

By the above weight it appears that the offal of this animal was less by 6 stone 13¾ lb than one third of her whole weight, which is probably smaller in proportion than any other cow possessed, as two fifths is the general allowance. When cut up, she measured on the rib 8 inches, top of the loin 7 inches, middle of the rump 9 inches.

Value.

	st.	lbs.		L.	s.	d.
Fore quarters . . .	25	3½	at 9*s.* 2*d.* per stone	12	13	6¼
Ditto	25	0	at ditto	12	11	3½
Hind quarters . . .	23	4½	at ditto	11	18	2¼
Ditto	23	7	at ditto	12	0	1½
Tallow	14	1	at 9*s.* 4*d.* per stone	6	11	4
Hide, &c.	5	2	. . . . .	1	17	1½
Head and tongue . .	2	11	. . . . .	0	10	0
Heart and liver . . .	2	3	. . . . .	0	10	0
			Total value . .	L. 58	11	7½

On Wednesday, the 27th of May, 1808, a cow was killed by Mr. James Cale of Ledbury, bred and fed by E. Walwyn, Esq. of Hellens, on hay and turnips, which weighed 16 score per quarter :—the hind quarters weighed 16 score 4lb and the fore quarters 15 score 16lb; the fat weighed 9 score. This cow was of the true Hereford breed, and calved in August last.

	L.	s.	d.
The fore quarters, 1,280lb, or 91 stone 6lb (14 lbs to the stone), at 9*s.* 2*d.* per stone .	41	18	1
Supposing this cow's offal equal to Mr. Strickland's	9	8	6
Total value . .	L. 51	6	7

It should be observed, the cattle given in Mr. Culley's book were slaughtered from nineteen to twenty-nine years ago, when they appear to have been heavier than at the present time, as the carcase of the cow mentioned weighed 127 stone 11lb, and Mr. Strickland's weighed only 97 stone 1lb; the difference 30 stone 10lb: hide, Mr. Strickland's 5 stone 2lb, the other 6 stone 8lb; tallow in Mr. Strickland's 14 stone 1lb, in the other 15 stone 12lb: the difference in weight of hide 1 stone 6lb;

ditto in tallow 1 stone 11lb: to shew the difference in value, the account will stand thus:

	st. lbs.			*L.*	*s.*	*d.*
Beef . .	30	10	at 9*s.* 2*d.* per stone . .	14	1	6½
Hide . .	1	6	at 6*s.* 3*d.* ditto . . .	0	8	11
Tallow .	1	11	at 9*s.* 4*d.* ditto . . .	0	16	8
				L. 15	7	1½

The difference, therefore, is 15*l.* 7*s.* 1½*d.* in favour of the old breed, which is a considerable sum; but there is a worse consideration than that, in what is thought to be an improved breed—the cows give very little milk (my information on this subject comes from a principal cow-keeper in London); and a cow's milk is worth more than her carcase. But I believe the present rage for small bones in cattle, and other animals, is founded on a very bad principle; the excellency of those animals has been not properly elucidated; the fact is, the diminution of bone occasions a diminution of almost all other useful qualities. The light offal of Mr. Strickland's cow is remarked; but where would have been the harm, if, with not more expense in rearing and fattening, the weight of the offal had been greater, and she had been 30 stone heavier? I am perfectly satisfied, from the correct experiments in feeding animals recorded in this work, that there is but a very small difference between a large, coarse-made animal, and a delicate, small-boned one; that either extreme is wrong; and that the light, small bones, produce light carcases of flesh, which will be more clearly seen every day, and any man who attends Smithfield market may be convinced of the fact, either in cattle or in sheep, pigs, &c. In regard to the feeding of cattle, cow-keepers who milk three or four hundred cows, a less or greater

number, give regularly to each cow an equal proportion of food; now, if there were the difference which critics have for a long time pretended, the world might believe that some of the cows would leave half their allowance, while others would be half-starved. This is a strong case, and carries proof with it, that cattle in general eat nearly the same quantity, as many of these cows vary in size and shape—some are small-boned and some very large, some have fine features, and some are quite the contrary: for although mostly Yorkshire cows, they are of various make and appearance, yet they are very rarely seen to leave any of their food, or seem to want more; and it is evidently not the interest of a cow-keeper to stint or starve any of his cows; therefore, if they did not consume nearly alike, he would allow them different proportions. As to the offal, that will be fully considered in another part of this work; but I am of opinion, that an ox of 300lb weight contains more offal, namely, what the consumer pays for, but does not eat, than an ox of 2,200lb weight: and it is with the breeders of cattle to consider what they are about, for I am certain that the general idea respecting small bones, and very fine small heads, is wrong. I would not be understood to recommend a coarse animal, but one in make like the fat cow described at the beginning of this work, with as large limbs, and a clean bone; in the middling way, neither large nor small: for I am thoroughly convinced that very small bones and sinews, which generally go together, indicate small quantities of flesh, causing light weights and bad butcher's cattle, which is a loss to all parties concerned, but eventually falls heaviest on the consumer. My intention being to as clearly elucidate every matter as I possibly can, I will give the dead weights of the cattle shewn for prizes at the Smithfield show, 1807.

Class I. Prizes of THIRTY GUINEAS.—*Mr. William Flowers' deep-red Hereford ox.*

The return from Mr. J. Dobito, of No. 46, Shoreditch, who killed this ox, states the dead weight as follows:—

	8 lb to the st. St.	lb.	14 lb to the st. St.	lb.		L.	s.	d.
Carcase, four quarters	210	3	120	3	at 9s. 2d. per st. of 14 lb	55	1	11
Hide and horns	16	0	9	2	at 6s. 3d. ditto, ditto	2	18	1
Head, tongue, and pluck	16	2	-	-		0	10	0
Entrails, and contents	45	7	-	-		0	5	0
Blood	10	1						
Tallow	23	0	13	2	at 9s. 4d. ditto, ditto	6	2	9
					Whole value	L. 64	17	9

Mr. William Flowers' Hereford ox (which came as a companion to the above).

The return from Mr. William Browning, butcher, of Leather-lane, who killed this ox, states the dead weight as follows, viz.

	8 lb to the st. St.	lb.	14 lb to the st. St.	lb.		L.	s.	d.
Carcase, or quarters	167	4	96	8	at 9s. 2d. per st. of 14 lb	44	5	3
Loose fat	21	6	12	6	at 9s. 4d. ditto, ditto	5	16	0
Hide and horns	15	0	8	8	at 6s. 3d. ditto, ditto	2	13	7
Head, pluck, & feet	14	1	-	-		0	10	0
Entrails, empty	12	1						
Blood	5	0				0	5	0
					Whole value	L. 53	9	10

Class V.—*Mr. Martin Webber's Devon ox,* No. 1.

The return of Mr. John Lomas, butcher, of Kensington, who killed this ox, states the dead weight as follows:—

	8 lb to the st. St.	lb.	14 lb to the st. St.	lb.		L.	s.	d.
Carcase, or quarters	153	6	87	12	at 9s. 2d. per st. of 14 lb	40	18	5½
Loose fat	29	0	16	8	at 9s. 4d. ditto, ditto .	7	14	8½
Hide and horns . .	11	0	6	4	at 6s. 3d. ditto, ditto .	1	18	8½
Head and tongue .	4	1	-	-	. . . . .	0	10	0
Feet	3	2	-	}				
Heart and lights .	2	3	-	}	. . . . .	0	5	0
Liver and melt .	1	7	-	}				
					Whole value . L.	51	6	10

Mr. Martin Webber's Devon ox, No. 2.

The return from Mr. John Lomas, as above, who killed this ox, states the dead weight as follows, viz.

	8 lb to the st. St.	lb.	14 lb to the st. St.	lb.		L.	s.	d.
Carcase, or quarters	141	0	80	8	at 9s. 2d. per st. of 14 lb	36	18	7
Loose fat	23	5	13	6	at 9s. 4d. ditto, ditto .	6	5	4
Hide and horns . .	10	2	6	10	at 6s. 3d. ditto, ditto .	2	1	11½
Head and tongue .	3	6	-	-	. . . . .	0	10	0
Feet	2	7		}				
Heart and lights .	2	1		}	. . . . .	0	5	0
Liver and melt . .	2	2		}				
					Whole value . L.	46	0	10½

Class VI. Prize of TWENTY GUINEAS.—*Mr. Samuel Chandler's French and Devon ox.*

The return of Mr. Philip Reynolds, butcher, of N° 123, High-street, Borough, who killed this ox, states the dead weight as follows:—

	8 lb to the st. St.	lb.	14 lb to the st. St.	lb.		L.	s.	d.
Carcase, or quarters	136	2	77	12	at 9s. 2d. per st. of 14 lb	35	13	8½
Loose fat . . .	24	2	13	12	at 9s. 4d. ditto, ditto .	6	9	4
Hide and horns .	10	6	6	2	at 6s. 3d. ditto, ditto .	1	18	4
Head and tongue .	5	3	-	-	. . . . .	0	10	0

	8 lb to the st.			L.	s.	d.
			Brought forward . .	44	11	4½
Feet	2	6				
Heart, skirts, sweetbread, melt, kidneys	2	4				
Tripe (without fat), neck, reed, liver, gall, lights, bladder, and entrails	9	2	. . . . .	0	5	0
Contents of entrails	5	5				
Blood	6	6				
			Whole value .	L. 44	16	4½

Class VII. Prize of TEN GUINEAS.—*Mr. Samuel Chandler's black Scotch Highland ox.*

The return from Mr. Philip Reynolds, as above, who killed this ox, states the dead weight as follows, viz.

	8 lb to the st.		14 lb to the st.			L.	s.	d.
	St.	lb.	St.	lb.				
Carcase, or quarters	81	4	46	8	at 9s. 2d. per st. of 14 lb	21	6	11
Loose fat . . .	10	0	5	10	at 9s. 4d. ditto, ditto .	2	13	4
Hide	8	1	4	9	at 6s. 3d. ditto, ditto .	1	8	6½
Head and tongue .	4	1	-	-	. . . . .	0	10	0
Feet	2	0						
Heart, skirts, sweetbread, melt, and kidneys . . .	1	4						
Tripe (without fat), neck, reed, liver, gall, lights, bladder, and entrails	7	0			. . . . .	0	5	0
Contents of entrails	6	0						
Blood	4	4						
					Whole value .	L. 26	3	9½

The above accounts of the weights of cattle were copied from Mr. A. Young's "ANNALS" for April

1808, with the addition of the second column, in which the weight is brought into stones of 14lb, for the purpose of reconciling it to the calculations of different counties; and a third column, shewing the value in money, according to the present prices.

If the Yorkshire cattle are as large and fat as they were when Mr. Culley recorded those I have taken from his treatise, the reader will, by examining, find the Yorkshire ox to exceed the Hereford in weight, by, taking the very best of both kinds, from 700 to 840lb a carcase. The average weight of Sir Henry Grey's two oxen was —the carcases 152 st. 8½ lb, tallow 16 st. 3½ lb, hides 9 st. 6½ lb: Mr. W. Flowers' two oxen together average 108 st. 5½ lb, tallow 10 st. 11lb, hides 8 st. 12lb: consequently Sir Henry Grey's Yorkshire oxen exceeded Mr. Flowers' Hereford as follows:—

	St.	lb.	St.	lb.	Difference.	L.	s.	d.
Sir Henry Grey's Yorkshire, carcases . . .	152	8½	44	3	at 9s. 2d. per st. of 14 lb	20	5	4
Mr. Flowers' Hereford, carcases	108	5½						
Sir H. Grey's, tallow . .	16	3½	3	6½	at 9s. 4d. ditto, ditto .	1	12	7
Mr. Flowers', tallow	12	11						
SirH.Grey's, hide	9	6½	0	8½	at 6s. 3d. ditto, ditto .	0	3	8
Mr. Flowers', do.	8	12						
						L. 22	1	7

Thus, Sir Henry Grey's exceeded Mr. Flowers' in value, each 22*l.* 1*s.* 7*d.*, or the two together 44*l.* 3*s.* 2*d.*

The whole weight of Mr. Flowers' two Hereford oxen being 216 st. 11lb, averages 108 st. 5½ lb; tallow or loose fat, together 25st 8lb, averages 12st. 11lb; hides, together 17 st. 10 lb, average 8 st. 12 lb: Mr. M. Webber's two Devon oxen, weight together 168 st. 6 lb, average

84 st. 3 lb; loose fat, together 30 st.; hide, together 13 st.: consequently these two Hereford oxen exceed the two Devon as follows:—

	St.	lb.	St.	lb.	Difference.	L.	s.	d.
Mr. Flowers' Herefords, carcases	108	5½	24	2½	at 9s. 2d. per st. of 14 lb	11	1	6¾
Mr. M. Webber's Devon, carcases	84	3						
Mr. Flowers', hide	8	12	2	5	at 6s. 3d. ditto, ditto . .	0	13	9
Mr. M. Webber's, hide	6	7						
					L.	11	15	3¾
Mr. M. Martin's, loose fat . .	15	0	2	3	at 9s. 4d. ditto, ditto . .	1	0	10
Mr. Flowers', do.	12	11						
					L.	10	14	5¼

By the foregoing comparison it appears that the two Hereford oxen exceeded the two Devon oxen in carcase and hide 23*l.* 10*s.* 6½*d.*, which is 11*l.* 15*s.* 3¼*d* an ox; but the Devons exceeded the Herefords in loose fat 2*l.* 1*s.* 7*d.*, or 1*l.* 0*s.* 9½*d.* an ox; leaving an average value in favour of each Hereford of 10*l.* 14*s.* 5¼*d.*

The average weight of Mr. M. Webber's Devon oxen being as before; Mr. S. Chandler's French and Devon ox weighed 77 st. 12 lb, loose fat 13 st. 12 lb, hide 6 st. 2 lb: therefore the difference in value was as follows:—

	St.	lb.	St.	lb.	Difference.	L.	s.	d.
Mr. Webber's average, carcase . .	84	3	6	5	at 9s. 2d. per st. of 14 lb	2	18	0
Mr. Chandler's ox, carcase . . .	77	12						
Mr. Webber's average, loose fat .	15	0	1	2	at 9s. 4d. ditto, ditto . .	0	10	8
Mr. Chandler's ox, average, loose fat	13	12						
Mr. Webber's average, hide . . .	8	12	2	10	at 6s. 3d. ditto, ditto . .	0	16	10½
Mr. Chandler's ox, average hide . .	6	2			Greater value of Mr. Webber's oxen . .	L. 4	5	6¾

Thus, Mr. Chandler's true-bred Devon exceeded Mr. Chandler's French and Devon 4*l.* 5*s.* 6½*d*: but if we take the best Devon ox, there being a great difference between them, the account will be as under:—

	St.	lb.	St.	lb.	Difference.	L.	s.	d.
Mr. Webber's best ox, carcase . .	87	12	10	0	at 9*s.* 2*d.* per st. of 14lb	4	11	8
Mr. Chandler's ox, carcase . . .	77	12						
Mr. Webber's, loose fat	16	8	2	10	at 9*s.* 4*d.* ditto, ditto . .	1	5	4
Mr. Chandler's, loose fat	13	12						
Mr. Webber's, hide	6	4	0	2	at 6*s.* 3*d.* ditto, ditto . .	0	0	10½
Mr. Chandler's, ditto	6	2						
					Greater value of the best Devon than the cross with French	L. 5	17	10½

The weight of Mr. Chandler's French and Devon ox being as before; his black Scotch Highland ox weighed, carcase 46 st. 8 lb, loose fat 5 st. 10 lb, hide 4 st. 9 lb: the difference in value was as follows:—

	St.	lb.	St.	lb.	Difference.	L.	s.	d.
The French and Devon ox, carcase	77	12	11	4	at 9*s.* 2*d.* per st. of 14lb	15	8	6
The Highland Scot, carcase . . .	46	8						
French and Devon, loose fat . . .	13	12	8	2	at 9*s.* 4*d.* ditto, ditto . .	3	16	0
Highland Scot, loose fat	5	10						
French and Devon, hide	6	2	1	7	at 6*s.* 3*d.* ditto, ditto . .	0	6	6½
Highland Scot, ditto	4	9						
					Greater value of the cross	L. 19	5	0½

Note.—These calculations having been made with a view of drawing a comparison between large and small animals, where the offals are charged, such as heart, &c.

they are taken low, as much being allowed for the offal of the smaller oxen as for that of the larger, though the offal of a large ox is worth nearly double that of a small one: and in Mr. Flowers' best ox, no loose fat being given, it is guessed at; but as my opinion is in favour of large animals, I do not wish, in any calculation, to give them an unfair advantage, and may, therefore, have allowed Mr. Flowers' ox more than he had.

Opinions are divided respecting the difference in quality of the flesh of large and small animals. I have made it my business to see many of those show animals, after they were killed, and have often bought of the beef; but I never ate beef from any of them equally good to that of a moderately fed beast: and as to small animals fed to an extreme, they are generally oily, and some of them as black as horse flesh. It appears to me there is a period for all things. Probably some of those cattle which are scarcely eatable, by being long fed on rich, strong food, and in stalls, (like a forced vegetable, which having attained its perfection, will go to decay), had they been taken at a proper time, might have produced fine flavoured beef. I know several highly respectable cutting butchers, who usually kill their own beef, have bought of those over-fed cattle, and they declare they will never buy another. But I do not think the beef those animals prove to be when killed, is any criterion, by which to judge of the quality in each kind of cattle; though I am persuaded a large animal stands a much better chance to be good useable beef, after being high kept in stalls, than a small one, and the large Yorkshire ox in particular, as it is well known cows of no other breed will stand that unhealthy confinement for so long a period.—I consider the Scotch cattle as very improper.

SECTION XVII.

Method of treating Cattle when young, and breaking them to be useful, either for the Dairy or the Yoke.

WHETHER calves are reared at the kit or with the cow, it is proper to tie them up, if only for a week or fortnight, as they thereby become obedient to a rope ever after, and are learnt to be led.

It is a good way to tie young steers, intended for the draught, together by the heads, the rope used being of a soft kind, or it will quickly render their heads sore. Attached to the rope, there must be a piece of chain, about two feet and a half or three feet long, according to the size of the cattle, with a swivel in the middle, to turn as the cattle change sides, to prevent the rope twisting into knots. Some people put them in yoke, and hoops; but, when loose in a pasture, I have known many accidents happen to young steers so treated; for if there be any deep ditches, hollows, or holes, they are liable to push one another in. There is also one inconvenience attending the use of the yoke for draught oxen, when employed to cart hay or corn; for it is observed they will not stand, but will keep eating, and require a person constantly by them. Nevertheless, I am very partial to yokes and hoops, for different reasons: in the first place, they are cheap and simple; and secondly, I am of opinion, that a pair of oxen abreast would draw as great a weight as three such oxen one before another in harness: nor do I see any necessity for using horse-harness for oxen to draw in;—a cart saddle becomes the back of an ox just as well as a cocked hat would do his head. The ox is weak in the back, though very strong in the neck; but, as he draws by the withers on the upper part of his neck, not by the shoulders, a horse-collar is very

improper for him. The manner of an ox's drawing is quite contrary to that of a horse; the latter is strongest in his back, where the former is weakest; but the strength of the ox is so prodigious in his neck, that, could he get his head under, he will almost overturn a house. Leather collars, housings, back-bands, a horse's bridle, tassels, &c. would become a pig as well as an ox; at an annual expense of at least from 3*l.* to 4*l.* 15*s.* including keeping in order and repairs: while yokes and hoops may be obtained, at the highest charge, for 10*s.*, and kept in repair for 2*s.* 6*d.* or 3*s.* a year; and they are, at the same time, more becoming. I have known many instances of oxen drawing a weight in deep dirty roads, that would nearly have laid a horse fast, particularly in woods; for a beast is scarcely to be laid fast in dirt, as he will roll through: and by drawing in yokes and hoops, side by side, they are nearer their work; the advantage of which may be seen in the conduct of the carter driving a team of horses single, who, if his cart or waggon gets fast in mire, takes off his fore horses, and puts them as near to the cart or waggon as he can fasten them: but it requires little penetration to perceive, that the nearer the power is to the burthen the lighter it must draw on all roads. Oxen when double quarter with much less difficulty than horses; they are naturally surer footed, and not so liable to slip, by their feet being cloven. When the young steers have been accustomed to go side by side, as directed, if the person using oxen for draught have two pair well broken, and these young steers be put in the middle, one pair before and another behind, there will not be the least difficulty in breaking them in, for being in company with other cattle, they will readily walk forwards. At all times observe not to put them to any work that requires irregular pulls, such as leading dung, where the cart takes more power than

the shaft oxen can exert; for on such occasions the carter is obliged to use the whip, which frightens the young steers, and these, finding themselves fast, will probably draw back, and even take the strength of the two fore oxen to keep them straight. Therefore, dragging the harrow or scarrifier is the best employment until they have been accustomed to labour; for they ought to have little occasion to use exertion, nor should they be at all forced, for some time, but left entirely to themselves, the driver taking no notice of them, till they begin to draw, when he should give them encouragement. Every driver ought to feed the cattle he drives, as cattle and all animals readily know the persons from whom they receive their food: but animals have more discernment than many people are aware of, and are very sensible of good or bad treatment. I have seen many instances of an ox, ill treatment at first rendering it obstinate, that never could be made useful. Frequently may it be seen, that an over-drove bullock, in Smithfield, will lay himself down, and cannot be forced to get up by any means whatever: I once saw a bullock lie down on Blackfriars-bridge, and, after various ineffectual attempts to make him rise, the butcher was compelled to kill him on the spot. When I lived at Slane I had, as it were, to begin the world again, in that respect; and I saw it necessary, and would prove useful, to draw some steers, but I had no other means than to put the first I began to work among horses. He went off very well, but when he was about a mile from home, passing through the village of Slane, he took fright at something, and finding himself fast, he fell down, and would not rise again; we therefore took off his harness, and left him. After lying there about an hour, he got up, and returned home. Afraid he would remember this, I let him alone about a week; I then put him by the side of another steer, in

hoops and yokes, and turned them in a fold-yard for a day, feeding them in that state: they walked freely about in a few hours. At night I took the yoke and hoops off. I repeated this proceeding for two or three days; I then put a pair of horses abreast before them, and they went very well, and proved very useful. My reason for saying so much on this subject is, that a pair of oxen broke in to draw, sell for more by one third than their real value, both in Ireland and America.

SECTION XVIII.

Of Draught Oxen, the Sorts for use; their Utility, and how they may be rendered profitable.

THE Devon ox, as to the proper make and shape for all draught oxen, is more particularly formed for swiftness; the large Welsh is another sort well formed for speed; there is a Scotch ox, called the Fifeshire, somewhat similar: the Sussex ox is a good sort for draught, but as he is heavier, he will be slower; the Hereford is likewise useful for slow work; the Yorkshire ox, being so very large, must be expected to be slow: the Lancashire, or long-horned, are the least formed for draught of any, and seem not by nature designed for that purpose, as they come so early to perfection, for the purpose of fattening and the shambles.

I am of opinion, that oxen may be found of every species capable of acting as draught oxen, for slow labour, and that will draw heavy burthens small distances; but I consider an ox proper for horse labour, such as ploughing, harrowing, &c. and one merely suited for easy labour and fattening, as two distinct animals, varying as much in their nature as a fat pig and an ass: the fattening ox ought to be so formed as to cover him-

self with flesh and fat like a pig; while the ox for swift draught and to bear fatigue, should be, like the ass, able to bear hardships, which is his fate when he is made to do horse-work.

Many writers on cattle have expressed their regret, that there are so few oxen drawn in certain districts; which is saying, a farmer does not know his own interest; for if a farmer found the proceeding advantageous, as he farms for profit, he certainly would adopt it. Neither can I see that such a proceeding would bring more weight of beef to the shambles. It would be older; instead of coming to market at the end of three or four years, it would come at six or eight: but almost any breed of cattle will at the former age weigh 560lb, and some as high as 800 or 900lb. They are not fit for hard labour till they are three years old, and, indeed, not very proper till four years; while any sort of steers that are large enough to work, if put to fatten at those ages, will attain the weight of about 800lb: when worked two or three years, they will probably rise to 900 or 950lb, and will then require the very same food to fatten them which would have been necessary at three or four years old. There would, therefore, be very little, if any, more flesh raised from a given number of calves reared;—as it must be expected there would be some losses by death, &c. not more than 50 or 70lb in two years. In rearing a young brood, the first year four calves do not consume more hay than one grown up beast; they then eat straw the two following winters, and are serviceable in making dung: whereas the working ox cannot be kept in flesh on this food. The projector thus expresses himself: "What a great saving it would be, to draw oxen instead of horses! the ox will live and work on straw, and do the work of a horse that eats a peck or more of corn a day, besides good hay."

This may do in theory and for fire-side and tea-table talk; but every farmer well knows, that if cattle be half fat, and put to the straw-fold the first week in November, they will make much more dung than profit; for if the straw be well thrashed and cleared from corn, by the 10th of May they will have lost much of their flesh without working: then what may be expected, if they work eight hours a day for six days in the week?—as they must do, if supplying the place of horses, or there must be many more kept, or a greater number of labourers, than is necessary. If an ox could work on straw food, and at the same time do the business of a horse, he would be a very superior animal, even for the purpose of draught, and the farmer would not be the last to discover it. Feeding horses with corn is not a pleasant part of the farmer's business, nor is it given to them wantonly, but in many instances with a sparing hand; but the man who starves his horse, is sure to starve himself. There is not the least doubt but on large farms, where there is much good grass land, some oxen may be used in draught to advantage for odd jobs, such as carting turnips in the winter or hay in the summer, carrying dung (having to stand while the dung is loaded and unloaded), &c. where perhaps only three or four hours' labour a day is required, and that but three or four times a week, while half the time they are standing and eating much better food than straw; for this kind of work the ox is much cheaper kept, and he is even better than a horse in cold rainy, snowy, or even frosty weather, as he is by nature more hardy than the horse: the standing is good for the former, though bad for the latter. But the use of oxen is spoken of as though it should be generally adopted. There are many small farmers, in some counties, that have scarcely grass for their cows, and oxen cannot be kept properly without good grass.

A farmer ought not to keep an idle horse; therefore, if he have only occasional employment for a draught animal, he had better keep an ox; but if he have constant hard work, a horse is certainly preferable.

Mr. Culley, in his work, begins the subject of drawing oxen with this expression, "I am sorry there are not so many steers kept as used to be formerly." I have the best reason to believe, Mr. Culley writes under a great mistake; there are assuredly very many more, either males or females, or both; for I have no doubt there is double the quantity of beef now consumed in London and the vicinity, that there was one hundred years ago. A strong proof of which is, the number of houses that are every year erected in London and the adjoining villages, sufficient, if placed together, to form a large town; while all denominations of people eat flesh meat; and the market is so fully supplied, that there is not room found sufficient for them to stand, all parties calling out to have the market enlarged. I am persuaded, if the same quantity of beef had been produced a century back, there would neither have been consumption for it nor money to pay for it. Again, he observes, that "rents are so high, the farmers cannot afford to keep steers to the age of oxen, without working;" but if rents have risen, the price of produce has also risen at least in equal proportion. That there are fewer oxen used for labour than formerly, I agree with him; and it has the effect I have before mentioned—producing more beef, by its being brought to market at the age of three or four years, instead of its being kept to that of seven, eight, nine, or ten. I am of opinion there is thus double the weight produced, and consequently that working oxen generally would be a loss both of time and profit. He then says, "farmers will not be persuaded to use oxen, because they are slower;" in which I likewise

agree with him: but the best reason would be, because they find it not to their interest. He mentions the feeding, shoeing, and harness, as economical. As to the feeding, an ox is as expensive for the draught, all things considered, as a horse; for when he is kept in continual work, the labourer's time must be added, and the small quantity of land the ox tills compared with the horse taken into the account, while the food that keeps a working ox would fatten him. Then shoeing, Mr. Coke of Holkham assigns that as a reason for giving up the practice: as to harness, the present method of harnessing the ox is, in most instances, as expensive as the horse. Mr. Culley lays particular stress on the ox coming finally to the shambles, while the horse is sold for the dog-kennel. In London, not only horses' flesh is all eaten by dogs and cats, but much beef besides; and in the country by the hounds: he seems not to be aware, that those animals would consume more meat if they had not horse-flesh. He then contends, that most people must agree as to the propriety of drawing oxen in work they *suit*. I agree with him in that particular, but we differ in opinion as to the work they *do suit*, which he says is ploughing—an employment I shall shortly give a strong proof against. He observes, that he advances the opinion from several years' experience; and boasts that he and his brother employ, at this time, one hundred and fifty, drawing in carts singly, which I know is a bad practice (and this, by the bye, proves that he uses horse harness), and double in the plough: but he acknowledges they are not so swift as horses. He concludes, by wishing the legislature would give premiums to encourage the rearing and drawing of oxen; at which I am surprised, from so sensible a man. The horses at present raised are indispensable, especially for the services of the state; and if government should, by any means, reduce the number one

third, there must be so many deficient, as there are not more bred than are kept in use. If price be a criterion, it may be supposed there is a scarcity of all kinds of horses, particularly good ones; as I believe the price of them has had a greater advance, in a given time, than that of any other domestic animal: and were there not horses sufficient for the business in which they are now employed, setting aside farming, what animals could be found to supply the deficiency? Horses could not be imported; beef may, or even cattle better than horses; but oxen could not be drawn in gentlemen's carriages, in post-chaises, or coaches, nor would they carry the traveller; neither is it consistent to use them in stage waggons, nor could they supply the place of soldiers' horses. Therefore, I cannot see the propriety of Mr. Culley's arguments. As to the farmer's profit, it rests with himself; and, if he choose, he can make a horse pay as much or more money than the ox, by buying or raising young horses, and working them on his farm from two till four, five, or six years old: the horse will continue improving till that age, stand his value about two or three years, and then decline as he rose. A farmer ought never to have an old horse on the farm, except it be a brood mare of a very good kind: let him be worked out by the tradesman or manufacturer, whose circumstances, generally speaking, better enable him to bear the loss, as his profits, even his horse-work alone, are much greater than that of the farmer.

The reader will observe, all my reasoning arises from experience. My father constantly used oxen for the purposes I have mentioned, sometimes with the plough and harrow, and I have driven them frequently; and, as he bought and bred many, I have had an opportunity of comparing various kinds: but working them at the plough or harrow, in hot weather, was, I think, attended

with the greatest cruelties I ever committed;—forcing the ox to move, his tongue hanging out of his mouth, and ready to die with heat, for hours together. I have known many instances of oxen being killed by the excessive fatigue, others totally spoiled; and not seldom have I stood idle nearly half the day, while the oxen have been lying on the ground, completely exhausted. Independent of my father's employ, I never had a farm of considerable extent but I worked oxen, and always found an advantage in so doing, but never at the plough or harrow.

During my survey of Dorsetshire, I met with one gentleman farmer, of the first rate in all his practices. He used forty-six Devon oxen, of the very best sort for the purpose of draught to have a proper aptitude to fatten, and eighteen horses; the latter, contrary to Mr. Culley's and my opinion, to do the carting work, as he finds the oxen improper to go up and down the hills; therefore the oxen do the ploughing chiefly. His method of feeding the latter was, to keep them on good grass in the summer, straw-fold till February, and then good hay. One man has two sets of oxen daily, about five hours each time; and they plough in pairs, with reins, without a driver. He reckons that three oxen will plough as much as two horses in a given time; and when I drew up the report, I allowed each horse to till nineteen acres and a half, the oxen ploughing only thirteen acres an ox, in a whole year; though such horses as this farmer keeps will, on similar soils to his, and with the same course of crops, plough, and keep in clean order, thirty acres and upwards. I have always effected this, the same horses leading the dung, and doing all odd jobs on the farm, besides. Therefore, of those oxen, two and a fifth do the work of only one good horse: and as I think them of the most proper kind, I believe it is out

of the power of man to do the business, by oxen, more advantageously. This proves them an expensive draught at plough. The oxen looked thin, and rather poor;—the only animal on the farm that appeared so, as he is an uncommonly good keeper. After he has worked these oxen two or three years, he fattens them on good grass and lintseed cake, employing a mill in the winter for the purpose of making lintseed oil and his own cakes; but the cattle, from being over-drove, are low in condition, and must take the longer time to fatten. When I was there, he had an ox very ill; it staggered and seemed ready to fall on its head, entirely from over-driving: an ox cannot be expected to walk with a horse. The weight of those Devon oxen, some five years and some six years old, was from 800 to 1000lb a carcase: but they were made completely fat, as this gentleman's oil-cakes are not squeezed so close, consequently much superior to the cakes generally used.

In regard to the oxen not carting, they were rendered unfit by being harnessed like horses. During my own practice of using oxen, I never found the least difficulty in drawing them up and down such hills as were in any of my farms. I mentioned this circumstance to a farmer from Cornwall, where the country is very hilly; and he said they experienced no particular trouble in drawing oxen over their hills, in yokes and hoops; as two oxen abreast in the yoke, going down hill, for their own ease readily learn to hold up their heads, and stop a carriage with more weight than that of one horse, and especially in a cart which throws the weight backward; and if a waggon, they can tie up a wheel. The Dorset gentleman farmer allows that oxen cannot be used to advantage without good grass land, and plenty of it; as the working ox ought to fill his belly in a little time, to

lie down to rest: this is highly requisite, for cattle, it may be observed, after much fatigue, prefer rest to food; in which they entirely differ from the horse, as he prefers food to rest.

There have been many instances of zeal in public-spirited men for the use of oxen in the draught at plough. The late Duke of Bedford was as much prepossessed in their favour as any man. Before I went abroad, I had the honour of riding with his grace over the farms at Woburn, and we had a conversation on that subject; my opinion was then the same as it is now, and I freely gave it to his grace. At my return to England there was not a single ox-team at plough on his grounds. I could mention a number of similar instances.

Every person must allow that oxen are a slow team in a plough, and I will enumerate some of the consequent inconveniences.—The time of getting seed of all kinds into the ground, is of material importance; so much so, that I have known an excess of from four to eight bushels an acre in grain: as to the turnip crop, the land cannot be too quickly ploughed, or too quickly sown with the seed, and harrowed in. I have frequently witnessed the loss of a crop on part of a field, by the land lying ploughed for the space of two hours only, on a hot day, before being sowed. Therefore, as much dispatch is required, the using of oxen at those times must be very injudicious. If, in using ox-teams, the time of sowing the lent corn be prolonged from twelve days to eighteen, it may occasion a loss of more than they earn in a year, or can possibly be saved by them. A gentleman farmer made a remark worth notice:—"In the time of harvest, it is necessary to trot the horses to the field," &c. In Norfolk, and some other counties, I must confess I have not seen any farming business done

to please me more than at Mr. Coke's sheep-shearing, where I saw the turnips sown with great dispatch, which I know to be of material consequence.

A sort of boast is often made, of drawing oxen single, like horses; but I think it a most horrid practice, either in horses or cattle. I will give a few reasons, by comparison.—Can any person suppose, if the mail-coach were drawn by four horses single, one before another, that it would perform the number of miles in the same time, and with equal ease? I am of opinion, it would be with some difficulty, if they performed it in twice the time. Or, were the horses in a broad-wheeled waggon, which is drawn by eight abreast, and sometimes by ten, put one before another, it is a doubt with me whether they could draw the waggon, with the weights laid upon it, at all, on difficult ground, up hills, or in mud. Mr. Culley mentions single-ox carts; the adopting of which would be a vile practice, much worse than the other: not a single argument has been adduced in their favour that will bear the test of examination. In the first place, a pole to draw the cart by, costs much less than shafts, the yoke and hoops less than a cart saddle; harness for two carts, and four oxen in harness, would cost at least 20*l.*; in yoke and hoops, about 20*s.* One man, with four oxen, either in a large cart or waggon, would take as much or more weight than the four oxen in four carts, while the four carts require each a driver; and, as all friction must consume power, less will be lost in a cart with two or a waggon with four wheels. A heavy carriage, when set going, will run with very little assistance from the team, if properly made and loaded, as may be seen in the very heavily laden stage-waggons, on hard turnpike roads, proceeding for a long distance together, and not above two of the horses, out of eight or ten, with their traces tight. Either a horse

or an ox in a cart is always in distress; he has no relief from the shaking of the shafts: and it is observed by the stage-waggoners, that the shaft horses are lower in condition, with the same keep and hours of working, than those that draw in the traces. But, from my own knowledge, I can speak decidedly as to this matter, having fully tried the experiment when I lived at Doncaster, and carried ale to Sheffield. The tolls at the turnpike-bars being less for six carts than for six horses in a broad-wheeled waggon, and having heard a great deal, and seen much in authors, in favour of single-horse carts, I thought, by adopting the use of them, to save money at the bars; I therefore got six carts, which were driven by two men, the usual load being given to each horse, in proportion to what he drew before in the waggon, namely, a ton a horse, besides the carriage. The result was, the horses, with the same hours' work and the same feed, appeared much injured, and the chafing of the cart made their backs sore; and I found that to keep them in as good condition as when in the waggon, they could not trail more than half their usual burthen. Again, when I lived in Ireland, where they use cars in all farming business, I made one waggon and three large carts; each cart carrying as much dung at one load as eight cars; consequently, one man and two horses to the fields, which were near the fold-yard, in the same given time took out as much dung as eight horses and eight men or boys: therefore, valuing a man's labour at 1*s.*, and that of a horse at 1*s.* 6*d.* per day, which is lower than can be afforded, the difference will be as follows.

My method of carting dung was with three carts, one standing and two going;—one horse standing in the cart-shafts, with two men to fill, and two horses in each moving cart, with each a man to drive;—they carted to the field

ten loads each, which was thirty loads a day. Now, to do this business with cars, with equal dispatch, it would have required twenty-four horses, and the same number of men: the account would, therefore, stand thus:

Expense of Carting.

	L.	s.	d.
Five horses, one day, at 1s. 6d. each . . .	0	7	6
Four men, one day, at 1s. each	0	4	0
Difference in the saving by carting, each day	2	8	6
L.	3	0	0

Expense of Cars.

	L.	s.	d.
Twenty-four cars, one day, a horse in each, at 1s. 6d. each	1	16	0
Twenty-four men, one day, 1s. each . . .	1	4	0
L.	3	0	0

The aggregate saving by the use of carts, in doing the business of one field of thirty acres, for turnips, at twelve loads of dung an acre, which occupied twelve days, at 2*l.* 8*s.* 6*d.* per day, consequently amounted to 29*l.* 2*s.*! And as I carted about 780 loads annually, the difference of expense between using carts and cars, was about 70*l.* a year!

During harvest work, Lord Conyngham one day took an account of the number of sheaves the three large carts, with shelvings, and the waggon, carried at each time; by which it appeared, that they brought in as many as sixty cars. Our practice was, two men and two horses to a cart; and the cars require one man and a horse to each car; the account will therefore stand as follows, viz.

Expense of Carts and Waggon.

	L.	s.	d.
Eight men, at 1s. each, one day	0	8	0
Eight horses, at 1s. 6d. ditto	0	12	0
Difference in saving, each day	6	10	0
	L. 7	10	0

Expense of Cars.

	L.	s.	d.
Sixty men, 1s. each, one day	3	0	0
Sixty cars, 1s. 6d. ditto	4	10	0
	L. 7	10	0

Our harvest occupied about twenty-one days bringing in; consequently, as the saving, by using carts in preference to cars, of one day was 6*l.* 10*s.*, that of the whole harvest, twenty-one days, would be 136*l.* 10*s.*! Now, this may stagger an English reader; but I have known one farmer employ a hundred cars at the same time, great part of them, with the man and horse, hired at 3*s.* 6*d.* a day each: if the cars are purchased, the original cost should be considered together with the wear and tear afterwards.

I suppose the Scotch cart to carry at one time as much as two cars; but if oxen were used to draw them, they would move too slowly; while horses, which go a trot, and sometimes even a gallop, to the field, occasion great havock when they return loaded, as the cars follow one another, by pulling down the sheaves and trampling on them.

Having made this digression, to give a very decided opinion as to the utility of small carriages for the use of farmers, I will return to the draught oxen.—It plainly appears the largest oxen pay the best for the yoke, as

they will continue increasing in size during the time they are worked; though even that greatly depends on situation. I have known instances of farmers in Middlesex buying calves in Smithfield market, from the best Yorkshire cows, to rear for stock; but they do not prosper, never attaining the size of the cattle bred in Yorkshire: it therefore seems to me, that the best of the kind found in a county is the most proper to keep in that county or its vicinity.

I have stated, that there is a great difference between the ox fit for fattening and the ox for the yoke. Mr. Culley, in his "*Observations on Live Stock,*" from page 92 to page 98, has given an account of the ancients' opinion respecting the make proper for draught oxen: I will add some extracts from that work.

"Varro says, 'The ox should have spacious horns, rather black than otherwise, a broad forehead, wide nostrils, a broad chest, and thick dewlap.' In another account he says, 'they should have thick and long necks, hanging-down dewlaps, tails hanging down to their heels, and the lower part of them very rough with hair; the feet not broad, nor such as clank when going; the colour black, red, or dun; if white, they are tender:' he prefers the red or the dun before either black or white." The ideas of the ancients, as given in Mr. Culley's book, apply rather to milch cows, than to oxen for the shambles; for they all seem to recommend large bellies, which, although unseemly, are a very good sign for milk, and in oxen that are not of a fattening kind, but which may suit for the draught, as they are likely to be hardy and strong, and of better wind. There is a sort of oxen, said to have hot stomachs, that soon, when the day is very warm, begin to hang out their tongues and give up; which seldom happens to a lean, ill-made ox. But in ancient times, breeding for the yoke must have been a

nuisance; though the decline in the number of draught oxen may partly arise from the improvement in the breed: the fattening kind must necessarily be slower, and worse workers; for it cannot be supposed possible, that a man inclined to be fat like Mr. Lambert, should equal Powell in swift or laborious exercise.

It seems, from Mr. Tull's account of working oxen, that in those days they were a sort of uncomfortable draught cattle: in Scotland, he says, the farmers used to set off to plough in the winter with four oxen; after a time, these four oxen becoming poor, the farmer put two more before the four, to pull them on; then the six got poor, and he was compelled to put two more before the six, for the same purpose!

SECTION XIX.

Houses proper for Cattle.

If houses are made use of for the fattening of cattle, they should be spacious and airy, and the standings about six feet wide, or wider, according to their size. It is economical, and even better, to have two in one standing; as thereby the man who feeds them can, with most kinds of food, serve two at the same time. But by no means let the standing be so wide as that they can turn themselves with the tail, or the hinder part, towards the manger, for they will not only dung in improper places, but dirty one another, and endanger themselves by being overcast. The post to which they are tied ought to be placed close to the partition, directly before the manger, with an iron staple; there should be a ring to slide freely up and down as the beast moves his head, with a piece of chain fixed to it about the middle, a ring at one end, and a T at the other: the length according to the size of

the beast, so as not to slip over his horns. The width of the partition above mentioned is proper for most common beasts, if larger or smaller it must be made accordingly; but, at all events, not so long or low as for the hucks of the beast, when he lies down, to go against it, as it would endanger their being flattened; independent of which, it will give more room behind. The standing should be about nine feet from the wall when he stands to eat his food; and the manger ought to be fixed so low, as that, when he lies down, his head may be above it; for if it be fixed so high as to force him to draw back, he will be compelled to lie in his dirt, because when he stands to feed, and drops his dung, it will fall in the very part to which his hind quarters will thus be forced. This is a very material consideration, and ought to be strictly observed; for I know, from experience, do all you can, some cattle will be apt to lie in their dirt; and when that is the case, I have observed such cattle pretty generally do ill in a house, while the very same cattle will thrive as well as others in pastures. When I surveyed the county of Bucks, Mr. Parrott, steward to the Marquis of Buckingham, had built a most superb house for cattle, superior to most I have seen; and when I made these observations to him, he immediately said I was right, and he would have all the mangers of his house lowered, as he acknowledged he had observed his cattle to lie in their dirt, without being aware of the cause.

There ought to be a groove or channel, of about fourteen inches wide and twelve deep, at the extent or length of the beast, as nearly as possible; in which few beasts will like to stand, as it throws them so high at the head and low behind, a position unnatural to cattle; consequently, either standing or lying, the beast will void his dung within the channel, as when he lies down, he will be uneasy if even any small part of him hang over.

The floor, if for cows, may be paved in such a manner as to be rather lower at the head than behind, as they void their urine into the channel. This plan is much better for cows; for when they lie highest with the fore part, their oxroad is sometimes forced out; and if in calf, the calf is forced in an improper manner backwards, which is contrary to nature, and throws great weight on, and frequently bruises, the udder. I have known the udders of many cows spoiled, by lying in houses improperly contrived.

A house for oxen cannot be made of the form described for cows; nor is it necessary, as the ox has neither an udder to injure, a calf to lie heavy, nor an oxroad so apt to come down. As it is the natural position for all animals both to stand and lie in an even posture, or more generally lower before than behind, and always wishing to assist Nature, but never to contradict her, I would recommend that the ox should stand in the position he likes best. If a stone, or a small iron grate, be fixed in the part where he drops his urine, it would contribute to his ease and comfort; as it is of great benefit for all animals to lie as dry as they can possibly be kept. Littering is very beneficial, where it can be obtained. Hay-lofts are very objectionable, and fodder-cases little better, except for turnips, potatoes, carrots, cabbages, &c. Food in general is given with less waste at the fore part, as it is liable to drop in carrying between the cattle, when they will naturally toss themselves about; but where hay is the only food, and the stacks can be conveniently placed, small holes may be made in front, with or without doors; which is a manner of feeding that I approve of much more than putting the hay into fodder-cases, as it loses part of its nutritive qualities by being exposed to the air. My father, who used to feed oxen on hay alone, never suffered a cutting to be more than three feet square,

and always had it covered with a piece of reed matting, to keep the weather from it, and carried to the crib immediately: his oxen were fattened at much less expense, and in less time, than cattle are by the methods now adopted.

SECTION XX.

Method of saving the Urine in Horse-stables, Cattle-houses, &c.

FOR this purpose there must be channels, or grooves, so formed as to convey the urine to some convenient place, where a barrel or small cistern is sunk in the ground, with a grated top or lid over it, to receive the moisture, whence it must be carried to another large reservoir, under cover, till the compost hill is made; (the management of this process, and its great utility, are fully explained in my ENGLISH FARMER, sect. 52, page 37; and in the new edition of THE EXPERIENCED FARMER, vol. I, page 206). I have proved the benefit derived from this practice by many experiments; and have found it adopted in different places, particularly the island of Portland, in Dorsetshire, where for a number of years they have carefully preserved the chamberlie of the inhabitants, and applied it as manure to the land intended for wheat, and to that crop during the winter months. But when used in the manner there generally followed (which is, by means of a large cask, with holes in it, somewhat similar to the machine employed in watering the streets of towns), time and experience have taught them great caution must be observed, not to apply it either in hot weather or at the approach of hot weather; for if used late in the spring, it will totally kill the wheat: it is likewise injurious to

the soil if put on when the weather is hot, for the power of the sun not only exhales the salts, or saline particles, from it, but at the same time the salts of the mould as far as it penetrates. The reader may be convinced of the propriety of this observation, by only noticing the spot of ground where cattle or horses have dropped their urine; which, if during the hot months, will become red, if in winter, it will be green. What I have above stated I know to be perfectly correct; as I have applied the black water from the stables, collected in a fold-yard, to lucern growing in drills, putting it on one row and missing another; when, to my great astonishment, I found it to kill some plants, and render the rest, which had escaped the watering, less luxuriant: but the reader must observe, I put it on the lucern at the time it was cut, in hot weather, supposing it would be doubly beneficial, as water and manure, in which I was completely deceived. Having a ditch, running by the side of a meadow, composed of the drainings of a brewery, the urine of cattle, chamberlie of the house, &c. which was very thick, almost the substance of cream, I watered a land of the meadow to try it, and the result was the same, though beyond my comprehension, as it appeared to me to be a sort of liquid manure. But the caution observed by the people living in the island of Portland, has clearly shewn me in what I was wrong. By them the great efficacy arising from the use of chamberlie is fully established; for although the soil of the island is very poor, much more so than the average of the county, the produce I received there equalled within two bushels an acre what I had had given me on some of the best land, of more than three times the value of that on the island. This circumstance led me to examine the soil and the crops; and finding the land of a poor nature, and the wheat, and even the barley, equal to the report given, I particularly

enquired as to their process, when the application of chamberlie came out. I had obtained a report of the island before, of another farmer, at the market at Weymouth; which agreed, as to produce, with the information I afterwards received, and may therefore be considered as a strong corroboration.

It will perhaps be observed, that after saying I have proved the great utility of chamberlie by my own experiments, I give an instance in which it failed; thereby seeming to invalidate the former assertion. But it is in the making of compost that I have found the urine of cattle, horses, pigs, &c. of so great value. In all the different trials I made of it for that purpose, it answered beyond my comprehension, until time put me in possession of the cause of its efficacy; and I have every reason to believe, that the urine of cattle, or chamberlie, added to the compost hill, will be of double value compared with the application of it alone, and that chamberlie is very superior to the urine of cattle, &c. But, that what I am here recommending may not be thought a mere whim, and lightly regarded, I will venture to assert my belief, that eight gallons of the urine of cattle and chamberlie mixed, when applied in a proper manner, will be found to equal in its effects a cart-load of good dung. The improved method, now commonly adopted, is to spread mould under the cattle, or in fold-yards; but this is very expensive, does the cattle more injury than the urine is worth—of which, after all, much is lost—and is a very unsightly practice.

SECTION XXI.

Stall-feeding, and the Use of the Fold to turn Cattle in.

It may be observed, I am an advocate for the fold altogether, and I think every person will agree with me in

saying, that stall-fed cattle would thrive better by having their liberty for a few hours each day—during the winter in the middle, in the summer morning or evening, or both; for by standing continually in one posture, the animals are prevented from indulging themselves, rubbing, scratching, &c. and must consequently feel uncomfortable, and be at times prevented taking their natural rest, or sleeping so long and soundly as they otherwise would: which, as sleep is allowed to be a great promoter of fattening, ought to be encouraged as much as possible. Constantly breathing in the same crib or trough, must also render it unwholesome; a free, uncontaminated air, is as necessary to cattle as to the human species. But the food given to stall-fed cattle is generally of a strong or sour smell, such as turnips, cabbages, and sour grains; consequently the trough or crib will, with the greatest care, have a very nauseous smell. It generally happens too, there are many cattle crouded in a very small space of ground; of course, if even the building be made airy, it will constantly be filled with a putrid steam, which must be highly noxious, and detrimental to their comfort. Therefore, even their being turned out for an hour or two each day will be attended with advantage, by giving the place air, and rendering it sweeter; at the same time affording an opportunity of cleansing it thoroughly: while the very sort of water I have before mentioned, which I have often observed the cattle to drink, even when composed of horse urine, pig urine, and their own, with a quantity of water, mixed, adds both to their comfort and health.

Probably there is not a set of men better acquainted with the real value of a fold-yard in preference to a house, or who suffer so much loss for want of it, than the London cow-keepers. It is a well-known fact, that there are no cows, with thick hides and long hair, will

thrive for any length of time in the London cow-houses; nor is it often that the Yorkshire cow will last more than three years: the cause is partly ascribed to the food, and partly to their standing and lying on bricks, added to the great heat of the place by the breathing of so many animals. One reason given for the Yorkshire being able to support it better than any other, is its short hair and thin hide. I have heard one of the oldest and most respectable cow-keepers in London say, that could a fold-yard be obtained, it would be the most desirable acquisition in the business: although their cows are frequently out in the air, six hours or more each day, in the winter season, and in the summer almost continually, except while they are feeding and milking: but, from the great number these men keep, the cow-stand is very generally trodden a foot deep or more in dirt. The fold wanted, is a littered fold, for them to rest in at night; for by being out in the dirty fold, and standing on bricks in the house, wet, without litter, their feet become soft, and they are frequently lame of their hind feet, which causes them to lie down oftener than nature requires, and thereby sometimes to get swelled knees and sore hips. The observation of the London cow-keeper must, I think, convince the reader of the justice of my opinion in prefering folds to houses; as the London cow-keeper, had he the same opportunity of keeping cattle in folds as the country farmers and graziers have, would gladly embrace it.

It may be observed, that cattle which have been out all the summer, have much long hair upon them, evidently intended by nature to protect them during the winter; for that hair does not come off, when they are out in the air, until the approach of hot weather. I have also found that cattle are much nicer in their food when fed in stalls, than when kept in the open air.

SECTION XXII.

Observations on the Food given to Cattle, stall-fed.

GRAINS are excellent forcing feed for cattle, especially milch cows: but it is an admirable improvement, to chop any sort of soft hay (rowin hay is the best), about an inch and a half long, and mix it up with the grains, one bushel of chopped hay to two bushels of grains: they ought to be mixed together at least twelve hours to heat, before they are given to the cows; and the harder they are pressed down the better. By feeding cows with food incorporated in this manner, I found them to give much more milk than when each article was used separately: the reason is obvious;—by the cut hay being mixed with the grains, the cattle are compelled to masticate the whole, for they generally swallow many of the grains, when given alone, without chewing, which may be seen by their dung: when they eat this mixed food, the dung is of such a composition as to render it impossible to tell what they have eaten; but when the grains are given alone, they pass them undigested, and fowls, rooks, &c. pick them out, but never scratch in the dung of chopped hay and grains. I tried oat straw, but the cows declined in their milk; nor did they milk so well with red clover hay as with rowin: I found hard hay, without exception, improper.

The most necessary consideration in feeding animals is, to contrive to give the food in such a way as to cause them to use their teeth; the more the food is chewed the better. Grains alone are apt to render cows *grain-sick*;—a disorder which causes them to decline speedily in their milk, so as to become nearly dry. This disorder arises from a lodgment of undigested grains in the stomach, and a consequent want of passage. The means of

cure resorted to by cow-keepers, are turnips or potatoes, by way of physic, which are sometimes very expensive. I have heard cow-keepers remark, that if the dung of cows be stiff, hard, and slimy, they never give much milk; and there is no set of men who have so ready an opportunity of judging as to the value of food given to cattle, as it may be ascertained in twenty-four hours. It would appear, therefore, that the dung of cattle, whether fattening or milking, ought to be rather soft; which, from the nature of their intestines, seems worthy of notice. The method I have recommended, of mixing chopped hay with grains, has not been, that I am aware of, adopted by any person besides myself; but I have proved its utility:—my cows, so fed, gave 20 quarts 1½ pint of milk on an average daily; while the greatest quantity is taken, by cow-keepers, at only eleven to thirteen quarts for the same time.

Lintseed jelly is another very good winter's food for cattle. To prepare this jelly, put the proportion of one quart of seed into seven quarts of cold water, and let it stand forty-eight hours; then boil it three hours, and add it to about one bushel of chopped hay, of a soft kind, an inch and a half long, or if longer no worse, provided it will mix properly, great caution being necessary in mixing, that every particle of the chaff may partake of the jelly, minding not to use more of the former than is sufficient. If this mixture be made some time before using, the better; and it should be treated in the same manner as is prescribed for grains. The mashing process must be conducted in the same manner as that of the brewer:—when the jelly is boiled, and mixed with the chaff, let it be covered to prevent the steam evaporating; the best cover is some dry chaff, as that will imbibe the steam; then, when the steaming has subsided, mix the whole together. It may be given to milch cows luke-warm; and will

cause them to milk well, the milk to be of a rich, pleasant kind, and the butter of a sweet, fine flavour.

At Lord Somerville's show, in 1807, I gave the foregoing receipt, by word of mouth, to the gentleman whose name appears to the following letter, written in answer to one of mine to his uncle.

"Hassingbrook-hall, Stratford Le Hope, January 10th, 1808.

"Dear Sir,

"My uncle has received your letter—but "not till yesterday, as he has been from home—and "desired me to answer it. This is the place where the "lintseed was tried.

"Mix three pints of lintseed to six quarts of water, "let it boil half an hour, and the next day it will be fit "to use.

"Mix six quarts of the jelly with three bushels of cut "chaff, for each beast, and they thrive very fast.

JOHN SCRATTON.

"P.S. If the lintseed be put in soak the day before, "it will boil much better."

I saw Mr. Scratton after he wrote me this letter, when he informed me that he had given some oxen the quantity he has mentioned for about a month before they went to grass, and it put them forwards in a surprising manner; that they afterwards made great progress at grass; and that he much approves of it for fattening cattle for six weeks or two months, though he thinks the quantity not sufficient to make them up, but that it would do well for milch cows.

Mr. James Scratton had been accustomed before to use lintseed oil in the following manner: to one ox, a quart of oil and three bushels of chopped hay daily, and increased to two quarts of oil a day. The oil, second quality, 30*l.* a ton; the best, 40*l.* a ton. He sprinkled

the hay with oil, and let it lie to heat. This he thinks fattening food. By the manner in which Mr. Scratton uses the lintseed for jelly, three pints, at 12*s.* a bushel, will be about 6*d.* a day, besides hay and preparing, in all about 9*d.* a day.

I am of opinion, that the quantity used by Mr. Scratton, though enough to begin with, would not be sufficient to render cattle fit for the shambles. Supposing a bullock to be five months fattening, and allowed three pints of jelly a day for fifty days, the ensuing fifty days six pints, and the last fifty days about nine pints, that would be six pints a day for the whole time: then, considering the three quarts of seed in six quarts of water to be reduced by boiling to three quarts of jelly, the seed, taking it at 4½*d.* a quart, will be 13½*d.* a day; the three bushels of chopped hay about 13½*d.*; in all 2*s.* 3*d.*: (this is reckoning the hay at 60*s.* a ton, but it is seldom worth more to the farmer, to fatten cattle, than 30*s.* a ton, besides getting the manure): the account, for one ox, then appears as follows, viz.

	L.	*s.*	*d.*
Lintseed jelly, 150 days, at 13½*d.* a day . .	8	8	9
Chopped hay, 3 stone daily, at 4½*d.* a stone,	8	8	9
One man's attendance	1	2	6
Fire	0	1	0
Total for fattening one ox . *L.*	18	1	0

Note.—Fire depends so much on situation, that there can be no correct calculation made of that article; but I think one man would look after ten oxen, chop the hay, and prepare the food, for which I allow 10*s.* 6*d.* a week, as he has to attend on Sundays: though, on this food, the manure is worth the man's attendance, which will reduce the expense to 16*l.* 18*s* 6*d.*

By way of estimate.—If the price of lintseed cake be 16*l.* 16*s.* a ton, and a beast eat 10lb daily at 2*d.* per pound (the exact expense of one pound would be $1\frac{3}{4}\frac{448}{2240}d.$, but, as there is some expense in carriage, I allow the fraction), then the expense, 1*s.* 8*d.*, added to the hay, allowing the same quantity as of jelly, $13\frac{1}{2}d.$ a day, will be 2*s.* $11\frac{1}{2}d.$ daily for one hundred and fifty days: the expense for one ox being as under:—

	L.	*s.*	*d.*
Lintseed cake, 150 days, at 20*d.* per day .	12	10	0
Hay, not chopped, 3 st. daily, at $4\frac{1}{2}d.$ per st.	8	8	9
One man's attendance	0	11	3
Total expense of one ox . . *L.*	21	10	0

Note.—There is no necessity for chopping the hay or cooking, therefore one man may manage twenty oxen; while the manure being as good as before, if we say it is worth 1*l.* 2*s.* 6*d.* and deduct that sum from the total, it will leave 20*l.* 7*s.* 6*d.*; giving a balance in favour of the jelly of 3*l.* 9*s.* If this be correct, it is worth consideration. But I am of opinion, that the most judicious way would be, to feed the cattle on the quantity given by Mr. Scratton, with the proposed increase, and an addition of about 5lb of cake to make them up: it would be something new, and grateful to the cattle. I have my doubts whether an ox would consume so much hay at cake as at jelly. It has been asserted by some, barley straw is as good as hay for cattle, at lintseed cake: I tried it at distiller's grains, but found it just as deficient as it is to hay in all other cases.

The quantity of cake allowed in the foregoing calculation is as much as I ever found my cows would take. I have heard it said, that an ox will eat 15lb a day: should that be true, the expense of cake would be 18*l.* 15*s.*;

but as the hay must be less, suppose half the quantity, which would be 4*l.* 4*s.* 4½*d.*, thus making the sum 22*l.* 19*s.* 4½*d.*

Potatoes, likewise, are used for food in the winter. They are generally prepared by steaming, which I have tried, and found it not a good practice: but I mixed my potatoes for cattle with straw; had I used hay, it might have been better: though I cannot see what advantage can arise from steaming potatoes, to mash them, especially as all the successful experiments I have made in feeding have tended to prove the advantage of giving food to animals so as to cause them to use their teeth, to masticate and chew it well. Little benefit can accrue from a mixture of mashed potatoes and straw, for the latter cannot contain much nutriment: if oats, unthrashed, cut into chaff, or good hay, were mixed with the potatoes, the end I wish to attain would be answered, and probably be productive of good effects.

I have tried potatoes lightly steamed, just warmed through, but could discover no apparent difference in their nutritious qualities. Horses are very fond of them raw, but they are weak food for a working horse; for cattle, about the same as turnips. They will seldom pay as food for cattle, as they are so much in request for family use; and if cattle eat as great a weight of potatoes as of turnips, they must prove very dear keep, as it is supposed each beast would consume about 12 stone a day. They are at the same time considered and found to be very unhealthy food. I knew an instance of a London cow-keeper (Mr. Kendal) feeding his cows, one hundred and thirty in number, with about 126lb of potatoes each, daily, during some part of the winter; and the following summer twenty-eight of them died: when opened, their livers, &c. were found to be ulcerated. From this it appears, that to give them in large quantities to

store stock is extremely dangerous. They are allowed to make the cows give much milk, but of a very poor, thin, unpleasant kind. Steaming has been thought necessary; but being expensive and troublesome, it has not, in a general way, proved profitable. Preparing lintseed jelly is less expensive than any other kind of boiled food; it pays better, and is very wholesome.

Turnips are another winter's food, and are both fattening and healthy, but expensive, from the prodigious weight a beast will consume in one day, namely, 18 stone: at that rate, an acre of good turnips will keep a beast forty-four days. Calculating him to take the same number of days in fattening as is allowed for lintseed cake and jelly, he would, to have his fill, eat 3 acres 1 rood and 18 perches; which, at 5*l.* an acre, would amount to about sixteen guineas: therefore, with attendance, the expense of turnips would thus be as high as lintseed cake. But as straw or hay is in most cases given, the animal may not eat more than 12 stone a day, which will reduce the sum to 11*l.* 4*s.*; but he will consume a much greater proportion of hay or straw than at lintseed jelly or cake, while the manure would not be of more than half the value. However, it seems that turnips are cheaper than cakes, but not so cheap as jelly; and I consider them a healthy food, and very proper to be given to store cattle at straw.

Cabbages are a most excellent food, and wholesome, but very expensive.

Cauliflowers are a summer food, to which I never found any thing equal for cattle. I once fattened a Scotch cow partly on them, with grains and grass, and the beef was superior, both in flavour and appearance, to any I ever tasted: its excellence was allowed by every person who ate of it. The carcase weighed 36 stone, London weight; and the inside fat 126lb. When I

lived at Slane, I gave this food to twelve rearing calves, and they grew and throve remarkably well. The cauliflower is a plant of quick growth, and therefore the cultivation would not be so expensive as may be supposed: many acres of it might be grown on land intended for wheat, to very great advantage.

Carrots are a most excellent winter food, but very expensive, as the taking up only costs three guineas an acre and upwards: there is no food superior for milch cows; producing much cream, and the best of butter.

In the list of imported plants, the *ruta baga*, or Swedish turnip, is much esteemed; but, during my experience, I have never found it so fattening as the globe turnip, or to give so much food on the same space of ground. *Borecole kale* I have tried, and found it excellent in the spring, in Ireland, where it grows well; but it does not make the same progress in the southern counties of England. *Thousand-leaved anjou* I have seen, but not used; it seems a good food, and the produce very great: appears suited both for summer and winter.

Corn, although the best of food, is so expensive as never to pay.

Hay, when properly harvested, and the cattle are of a good kind, rightly managed, is the cheapest food, and probably the beef is nearly as good as any, retaining more of its natural grass flavour. I allow two acres to an ox, which I have found, one season with another, to be about the proportion; and as meadow land, to produce fattening hay, can only be of a middling quality, I take the produce at about one ton an acre; thus it appears an ox requires nearly two tons of hay to make him fat: and allowing him the after-grass before he is put up, supposing the land worth 25*s.* an acre, and the harvesting to cost 10*s.* 6*d.* an acre, the expense will be 3*l.* 0*s.* 6*d.* If

he be fattening one hundred and fifty days, the consumption will be nearly 2 stone 2lb daily; which, valuing the hay at 40*s.* a ton, is about 6½*d.* a day; or if we value it at 3*l.* a ton, 9¾*d.* a day: the necessary attendance being very little, is fully paid by the manure; and there will be refuse hay tops and bottoms, with some leavings, that horses will eat. This seems a very economical plan, and is the mode of fattening cattle in the winter which I was first taught.

It may be observed, that in my calculations for fattening cattle or milch cows I always allow plenty of food, as I am no friend to serving fattening stock in a sparing manner. They should, as before stated, be fed with great regularity and in equal proportions, never giving them at one time more than they will eat, or laying any thing before them they dislike. The number of times they should be fed daily, depends on their food:—lintseed cake ought to be given twice a day; lintseed jelly, the same; hay, three times; turnips, and all such washy food, four times: always dividing the time as equally as possible. With such management, cattle will become fatter in one hundred and fifty days, than in three hundred even with common usage. My own experiments have convinced me, that great nicety is required both as to time and manner of feeding animals of every description.

Tares are summer food, much in use, very valuable, and may frequently be grown to profit; they are sold near London, for the purpose of soiling cows, at from 7*l.* to 10*l.* an acre: but this is a very dear food to buy, when, in addition to the first price, it is to be fetched from a distance of three or four miles. Tares seldom continue good food for many successive days: in wet weather they become yellow at the bottom, in some degree putrified, smelling fusty and unpleasant; and when

they lie together, in leading from the field, they acquire the same smell. To have tares in perfection, they ought to be sown, at the furthest, every six or seven days. When I kept cows, I bought tares at 8*l.* an acre; which proved very dear food, there being much waste in them, and they are scarcely ever sown sufficiently thick. As to tares being grown very long, it is useless, the cows then eat only the top part; and if they are mown before flowering, there is little of them, nor are they so good food. If sown more thickly, they would be shorter, and consequently better.

Red clover is also a summer food; much better than tares, and cheaper, as it may be mown twice or three times.

Lucern is a very valuable summer food; it may be mown two or three times, is about equal to clover in value as food, and will stand for many years.

Cow-grass is very similar to red clover, though not so fattening; but, on land that suits it, does not want renewing for a considerable time.

I have used *early May* and *York cabbages* in the summer, and excellent food they are, where the land suits them; I doubt whether any other crop would fatten cattle so quickly, cauliflowers excepted, on the same space of ground. When cut while the cabbage is young, if a nick be cut across the stalk at the top, it generally throws out two, three, or four sprouts, which very quickly become cabbages, and probably are equally fattening, if not more so than the first.

In soiling cattle, in the summer, I have been greatly disappointed. I had formed an idea, that by being kept in a quiet state, and receiving their food regularly, they would fatten, and that quickly; but I have found only cabbages and cauliflowers to answer that end; all other things keep cattle merely in middling condition, but

will not make them fat, or, if they be fat, scarcely keep them in that state; nor will store cattle grow and improve as they will out, on very moderate keep. When I lived in Ireland I stall-fed some; but a neighbouring gentleman farmer kept great numbers of very fine cattle for the purpose of fattening by stall-feeding during the summer. I often inspected them, and his different crops; all was conducted in a very proper manner—one crop following another, with open shed, and folds, nothing seemed to be wanting to render the plan successful. But many of his cattle, which he bought of a very good kind, and in high condition, scarcely held their flesh. He told me, that in two years he had lost a great deal of money; which, as his expenses, on one hundred and fifty Irish acres, were 1600*l.* a year, and the cattle were rather injured than improved, may be taken at not less than 1200*l.* I had likewise formed a mistaken notion respecting the manure, which I thought, from the succulent nature of the food, must be good; but, to my astonishment, I found it very weak, and of little value: I have since learned that all weak food will, in return, make weak dung, and more especially in the summer months. Many years have elapsed since I first observed that dung made in the fore part of the winter is very superior to that made in the spring; the cause of which I did not very well understand: but I have now no doubt it is the power of the sun, exhaling the saline particles from it. I have reason to believe, that one load of dung made in the months of November and December, is worth three loads made by the same cattle, and with the same food, in April and May; that the advantages of stall-feeding do not accord with my expectations, and that tares do not keep stock so well as I supposed. An acre of middling grass, mown and given to my cows, was cheaper at 12 guineas, than an acre of

tares at 7*l.*; the grass was mown twice, and fed afterwards: the cows fattened more on the grass, and gave more milk; and the second mowing was much better than the first.—I thought there would be a saving in mowing the grass; but in that opinion I was wrong, for the produce will fatten cattle better, and at the same time more economically, when they are turned to feed on the pasture.

There is another inconvenience arising from stall-feeding, which I did not foresee;—cattle will not touch indifferent food in houses and stalls, which in the open air they readily eat. I have to remark a very singular instance which afforded a convincing proof of this observation, and gave me occasion to consider the utility of preserving turnips for spring food, after the natural season is over. —I bought my grains of a distiller who fed many cattle on wash and turnips, grains, &c.: he had a large quantity of turnips preserved, topped and tailed, and laid in heaps covered up, looking as well in appearance in the month of April as they did in January; when all of a sudden the cattle refused to eat them. He asked me to take some, and sent me four waggon loads: I gave them to the cows in the house, in stalls, which had been used to turnips; but I might as well have given them so many pebble-stones. At a loss how to act with them, I considered the case; and knowing that cattle will eat food laid on the ground in the open air, which they will scarcely look at in a house, or even in cribs in a fold, I had them carried into the cow-stand (which was a piece of grass land); they then ate them up entirely. By this I discovered, that there can be but little use in preserving turnips, after the commencement of spring, and they begin to run into top; for although those turnips were preserved perfectly sound, their juicy nature had left them; while the cattle, at that time,

would have eaten the tops and fattened on them. This is plainly to be seen when sheep are folded on turnips during the winter months: while the turnip is juicy, good food, the sheep will scoop the bulb in preference to eating the top, which they neglect; but as soon as the top begins to run, and the juice leaves the root and flows into the top, they then neglect the former for the latter, and will, at that time, fatten more on the tops than they did before on the bottoms. Now, if this distiller had suffered the turnips to remain on the ground, and cut the tops off and given them to the cattle, they would have eaten them with eagerness, and fattened upon them. The result of this experiment was, I gave a bushel a day to each cow, while the cows continued to eat the very same quantity of hay and grains, without increasing in their milk, or being, that I could perceive, in the smallest degree improved. These turnips lasted about a month; and when they were all consumed, I expected the cows to drop in their milk, but was deceived: it was like a man cracking nuts—merely amusement, the turnips at that period having neither good nor harm in them.

I will mention another similar circumstance, which has fallen under my observation.—When I surveyed Dorsetshire, I met with a clergyman who lives at Grenville, the Reverend Mr. Evans, who has built a sort of elegant shed for a dairy of cows, and, at the time he built it, he put in a crib for them to eat their hay from. Seeing this a neat, smart-looking cow-shed, and observing on the opposite side a shabby crib, made of osiers, I asked him for what purpose it was intended, though, at the same time perfectly aware of its use; he told me the cows would eat any inferior kind of hay out of that, which they would not touch under the shed: and he had tried an experiment, by giving the cows their hay under the shed for a certain time, and then feeding them

in the crib in the fold; and he found they actually gave more milk when fed in the latter. This I know to be founded on fact; for cattle at straw in the winter will thrive much better, and eat the straw with more eagerness, when laid on the ground, without a crib, than when it is put into one. My own experiments were as follow.—For keeping cattle at straw in the winter, I built a house, and tied them up; when finding they succeeded much worse than my father's cattle in open folds, I thought it arose from want of water at their pleasure; I therefore put a trough at their head, to keep the water in, but this availed nothing. I then declined housing, and made a handsome fold, with a crib, boarded at the bottom, to prevent the corn from dropping through, and to keep their straw dry, thinking the cattle must do better if the straw were kept from snow, rain, &c.: but I still found they did not thrive as they ought. I then put cribs into the fold; but no method answered so well as the same quantity of straw thrown on the ground. When I formed the fold, with a crib round, I calculated on being able to keep a greater number of cattle, together with a few horses among them, to pick up the loose corn that might be scattered from the straw; while the cattle would have an opportunity of choosing the best of the straw, the refuse serving to litter horses, calves, pigs, &c. This not answering my expectations, I subdivided the fold into three parts; it was large enough at first for thirty, therefore each division kept ten: this seemed some amendment; but I still saw that cattle belonging to other persons who had neither fold nor crib succeeded much better than mine, which were then, as I thought, fed in a slovenly manner—cattle, horses, pigs, geese, &c. all being permitted to trample on the straw at the same time. For this I knew not then how to account.

In regard to the saving I expected, by not using clean straw from the barn for littering the plough horses, which were loose, three and three in a stall, it was a very improper calculation; for those horses, being high fed, picked out more of the best of the straw by way of change, than the cattle: and when it was taken from the horses, wet with the urine and dung intermixed, the cattle ate it with much greater avidity than they would have eaten fresh straw out of the barn; while, if thrown out on a heap, only a master ox or two were admitted to partake of it. The pigs fared worse, by the corn being kept in the manger; though they produced more clear profit than the cattle, for I never gained any thing by keeping cattle at straw, further than the convenience of raising a store stock and making dung. But it is more profitable to give cattle at straw some turnips, or other better food, to keep them thriving: for by this plan two very material advantages are gained; first, in raising them one year in three sooner for the shambles; and secondly, in the much better quality of the dung. Keeping stock in a starving condition is a stand-still business, and must prove injurious; for cattle thereby lose in the winter what they have gained in the summer.

On the whole, I have found it the very best method, if it were not for the dung, to let cattle range at their liberty in an open field; and straw given in the winter is much better thrown down in the fold yard, without using a crib either there or in the stall: even the principal cow-keepers have seldom any crib for feeding their cows with grains, hay, turnips, potatoes, &c.; and I observed Doctor Layton had removed the racks from his stables, for he said the horses made less waste without them, and their condition was improved. I have myself found, that as great a number, if not a greater, is to be kept to much more advantage without cribs than with

them: the straw being thrown down in that loose way, gives them an opportunity of selecting the best, as it is not all intended to be eaten; while by lying on the ground, they move it about more readily, and pick up any corn that may be left; for it may frequently be seen, when dung is taken from a fold-yard, and immediately applied to land, after cattle, pigs, fowls, &c. have all picked, rooted, and scratched, there will be much corn remaining, which will grow in the succeeding crop. I had an instance of this when I lived in Ireland; where the dung being directly appropriated to the potatoe crop, there were so many oats grew, although I had not less than a hunded strong pigs and many small ones in the folds, that I had them reaped, and they materially injured the crop. It therefore appears to me not very easy for cattle, pigs, &c. to find all the corn left in straw. Nor do I think cattle have any objection to straw trodden in the wet, composed principally of urine: there is salt in urine, which they like, and is very good for them: and even any moist food seems to be their choice. When I lived in America, I harvested some Indian corn, cut at the time the blades and tops were attaining maturity, for fodder, though much of the corn was only in the milk: when all stacked together in the barn, it heated very much, and the corn became soft and mouldy. The corn blades and tops being all cut into chaff, the cows took the soft, mouldy corn, in preference to the hard, which only the horses would eat; nor would even the pigs touch any of the soft corn. I therefore conclude, that cattle by nature require in their food every thing soft, in their drink something saline, or physical, such as the water of ponds in which is a mixture of the urine of horses, pigs, their own, and even chamberlie and sope-suds, with the rain that falls. In regard to treatment, it may be seen, that housed cattle are much inclined to scurvy in the winter, consi-

derably more so than horses, while those that are fed in the open air in fields are less subject to that disease; this plainly shews, that cattle require some management different from the practice now generally adopted.

SECTION XXIII.

An Experiment in feeding Cattle, tried by G. Grierson, Esq. in Ireland.

In this experiment, the weight of hay and turnips consumed by twenty-three heifers, from November 4th, till February 18th—nineteen heifers, from that time till the 10th of March—seventeen heifers till the 18th—thirteen heifers one day—twelve heifers till the 26th—eight heifers till the 1st of April—and three heifers till the 5th, was as follows:—

1801.	Heifers.	Turnips. Tops. st.	Turnips. Bulbs. st.	Hay. st.
Nov. 4	23	-	-	48
5	23	-	-	48
6	23	-	-	48
7	23	-	-	48
8	23	-	-	48
9	23	-	-	48
10	23	-	-	48
11	23	-	-	48
12	23	-	-	48
13	23	-	-	48
14	23	-	-	48
15	23	-	-	48
16	23	8	8	48
17	23	8	8	48
18	23	8	8	48
19	23	8	8	48
20	23	16	16	48
21	23	16	16	48
22	23	24	24	48
23	23	24	24	48
24	23	36	36	48
25	23	36	36	48
26	23	48	48	48
27	23	60	60	32
28	23	60	60	32
29	23	60	60	32
30	23	12	12	50
		*424	424*	722

* It is somewhat singular, that in these turnips, the tops weighed precisely the same as the bulbs. I have averaged them at twelve tons an acre, supposing, from the quantity of tops, the bulbs to be small.

1801.	Heifers.	Turnips. Tops. st.	Turnips. Bulbs. st.	lbs.	Hay. st.
Dec. 1	23	49	94	7	32
2	23	49	94	7	-
3	23	60	140	0	32
4	23	24	52	7	32
5	23	48	56	0	-
6	23	24	56	0	32
7	23	24	40	0	32
8	23	48	20	0	32
9	23	48	40	0	32
10	23	60	-	-	32
11	23	60	-	-	32
12	23	-	262	7	96
14	23	-	-	-	96
16	23	-	38	0	96
17	23	24	99	0	32
18	23	24	135	0	16
19	23	-	-	-	96
21	23	48	201	0	16
22	23	24	145	0	16
23	23	12	65	0	96
25	23	-	-	-	16
26	23	-	-	-	16
27	23	-	-	-	16
28	23	12	140	0	96
29	23	24	161	0	-
30	23	12	161	0	128
31	23	-	108	0	-
		1435	674		2,109

1801.	Heifers.	Turnips. st.	Hay. st.
Jan^{y}. 2	23	-	96
4	23	108	32
5	23	108	96
7	23	-	64
8	23	117	96
11	23	-	32
12	23	-	96
14	23	-	96
16	23	-	96
18	23	105	-
19	23	99	32
20	23	159	-
21	23	42	48
22	23	75	-
23	23	153	80
25	23	160	224
29	23	90	-
30	23	75	-
		1291	1088
Feb. 1	23	186	122
2	23	27	-
3	23	162	-
4	23	105	-
5	23	39	48
6	23	366	-
9	23	261	248
10	23	348	-
11	23	87	-
12	23	261	-
13	23	261	-
15	23	87	32
16	23	90	32
17	19	180	32
18	19	180	32
19	19	180	32

1801.	Heifers.	Turnips. st.	Hay. st.
Feb. 20	19	190	98
21	19	90	22
22	19	180	32
23	19	-	32
24	19	90	-
25	19	90	-
26	19	180	-
27	19	180	96
		3520	854

	Heifers.	Potatoes. st.	Turnips. st.	Hay. st.
Mar. 1	19	-	180	-
2	19	-	90	-
3	19	-	180	-
4	19	-	180	-
5	19	-	90	64
6	19	-	180	-
7	19	-	90	-
8	19	-	90	-
9	19	-	90	-
10	17	-	180	-
12	17	-	90	160
13	17	-	180	-
15	17	-	90	-
16	17	-	90	-
17	17	-	90	-
18	13	-	90	-
19	12	-	-	128
20	12	-	180	-
22	12	-	180	-
24	12	-	60	-
26	8	241	30	64
29	8	112	60	-
		353	2490	416
April 1	3	51	30	32
2	3	59 7	30	-
4	3	-	60	-
5	3	-	30	-
		110 7	150	32

Beginning with the month of November, when the twenty-three heifers were first put up, they were fed with hay alone for twelve days, and consumed 576 stone, or 2 st. 1 lb 3½ oz. each per day. The twelve days following they consumed the like quantity of hay; and of turnips, bulbs 232 stone, tops 232 stone, which is 464 stone, or 1 st. 5 lb 2 oz. each per day:—this appears strange; as they ate as much hay when they had turnips as when they had none: it seems, therefore, the turnips acted as water, merely quenching their thirst, and they had the same appetite to hay as before. The next four days they consumed 192 stone of turnip bulbs, and 192 stone of tops; in

all 384 stone, or 4 st. 8 lb 3⅓ oz. each: hay these four days 146 stone, or 1 st. 8 lb 3⅓ oz. each; consequently, they increased in turnips 2 st. 12 lb 6⅓ oz. and decreased in hay 9 lb a day each: this shews they required 2 st. 12 lb 6⅓ oz. of turnips to supply the place of 9 lb of hay.

In December, the twenty-three heifers consumed of turnips 2,109 stone, tops 674 stone, or 3 st. 12 lb 10½ oz. each per day; hay 1,120 stone, or 1 st. 8 lb nearly each per day. In these four days they decreased in turnips 4 lb 14 oz. each daily, and only 3½ oz. in hay.

In January, the twenty-three heifers consumed, of turnips 1,291 stone, or 1 st. 11 lb 5½ oz. each per day; hay 1,088 stone, or 1 st. 7 lb 6 oz. each per day. This month the consumption of turnips decreased 2 st. 1 lb 4½ oz. and hay about 9 oz.: which decrease seems to have arisen from frost, as there are six days when no turnips were given.

In February, the twenty-three heifers consumed of turnips, in seventeen days, 1,980 stone, or 5 st. 1 lb 4 oz. each per day; hay 467 stone, or 1 st. 2 lb 11½ oz. each per day: then nineteen heifers consumed, in ten days, 1,540 stone, or 8 st. 1 lb 7½ oz. each per day; hay 378 stone, or 1 st. 13 lb 12 oz. each per day.

In March, the nineteen heifers consumed, in nine days, of turnips 1,170 stone, or 6 st. 11 lb 12¾ oz. each per day; hay 64 stone, or 5 lb 3¾ oz. each per day: then seventeen heifers consumed, in six days, of turnips 720 stone, or 7 st. 13 oz. each per day; hay 160 stone, or 1 st. 8 lb each per day: then thirteen heifers consumed, in one day, of turnips 90 stone, or 7 st. nearly each per day: then twelve heifers consumed, in four days, of turnips 250 stone, or 9 st. 5 lb 4 oz. each per day: then eight heifers consumed, in five days, of turnips 60 stone, or 1 st. 3 lb 8 oz. each per day; potatoes 353 stone, or 7 st. 4 lb 6 oz. each per day.

In April, three heifers consumed, in five days, of turnips 150 stone, or 10 st. each per day; potatoes 110 stone, or 7 st. 5 lb 2 oz. each per day; hay 32 stone, or 2 st. 1 lb 13 oz. each per day.—It is deserving of notice, that these three heifers ate in five days 260 stone of potatoes and turnips, which is about 17½ st. each per day.

The abovementioned heifers were of a middling size; which not only substantiates the fact, that a bullock will eat 18 stone of food in twenty-four hours, but that, as I have repeatedly asserted, a much smaller animal eats nearly, if not quite, as much as a large one: for I rather imagine potatoes to have more nutriment in them than turnips; therefore, these three heifers may be considered to have eaten nearly 18 stone each a day for three days together, besides 2 st. 1 lb 13 oz. of hay.

By bringing the whole calculation into one view—the number of heifers, 3,106, for one day; the turnips and potatoes consumed, 10,871 stone, which is 3 st. 7 lb each daily, on the average; and the hay, 5,216 stone, the average of which is 1 st. 9 lb 8¼ oz. each per day—the expense of feeding the twenty-three heifers will be as follows:

	L.	*s.*	*d.*
Hay, 32 ton 2 cwt. 2 st. at 3*l.* 10*s.* a ton .	112	12	0
Turnips, 6¼ acres, at 4*l.* an acre	26	0	0
Two men's attendance, at 9*s.* each man, twenty-three weeks	20	14	0
One horse and cart, 14*s.* a week, twenty-three weeks	16	2	0
Total . . . *L.*	175	8	0

Thus the cost in fattening was 7*l.* 12*s.* 6¼*d.* a head. And it seems, from this experiment, that cattle will, on the

average, consume 3½ stone of turnips, and about 1½ stone of hay, each a day; requiring about a rood of turnips, and an acre of good meadow land, to fatten one beast: time from twenty to twenty-five weeks. I resided in Ireland when this experiment was tried: the heifers were in good condition at the time they were put up to fatten, about half beef, and they were made good shambles meat, somewhat better than the beef at that season of the year in Ireland.

The preceding account was accurately taken by me from Mr. Grierson's book, which he lent me for the purpose.

It appears to me, from the foregoing statement, as well as by the account given by the London cow-keeper, (Mr. Kendal) p. 65, that there must be a material difference in the quality of hay made in some parts of the kingdom and that prepared by my father (as stated in p. 206), who fattened the finest bullocks on hay *only*, allowing them certainly not more than 3 stone daily. I am persuaded the difference must principally arise from the hay being in general too much exposed to the sun, and the nutritive qualities consequently in a great measure exhaled.

SECTION XXIV.

Description of Fold-yards; Necessity for having a Receptacle for the Juices which drain from the Fold-yard, and the best Means of Application.

THE fold-yard ought to be so situated among the buildings, as easily to receive every sort of manure, which the pigs, by routing and turning it over continually, will thoroughly intermix. The cattle will eat much of the litter that is thrown out from the horse-stables, which contains small quantities of hay wasted by the

horses, and at times a little corn and other matters; which by this management will turn to the farmer's account and profit in a greater degree than if the same quantity of hay had been taken from the stack, and immediately spread in the fold-yard, as the cattle in this case eat much of the horse dung as well as the litter.

Eating the litter that is taken out of horse stables appears rather extraordinary, particularly at the first view. I observed at Lord Somerville's show, at Barbican, the men had taken some of the wet litter from under the horses, and spread it about under the fat oxen; and, as they were tied with ropes, they drew back as far as they could, and ate that litter in preference to the very best hay and turnips then lying before them: the cause of which obviously arises from the salts that the horse dung and urine possess. I am at all times a great advocate for mixing of stock, even on grazing land, such as sheep, cattle, horses, hogs, &c. and the foregoing remark shews the propriety of so doing as strongly as any thing I could urge; for although a beast will not take the grass near to his own dung, he will near to that of another animal.

To return to the fold-yard.—The space of ground should be nearly level, with a small inclination or slope towards the receptacle or reservoir. I much disapprove of a fold-yard being so formed, as for the middle part to be the lowest, or in the form of a bowl; for on such a concavity the cattle, in the first instance, for some time, must lie wet, and the straw, or any kind of litter, will remain in a sound state for almost any term when immerged in water, and kept covered. A singular proof of this happened not many years ago in the vicinity of London.—In sinking a well at Tottenham-court, on the estate of the late Lord Southampton, at eighteen feet from the surface the workmen dug into something soft,

which, upon being sent up in the bucket, and examined, was found to be the paunch, or rumen, of an animal, containing a quantity of undigested hay, to all appearance as if it had been chewed but a few hours before. On further search, the horns of a cow, and part of the head with the hair on, were separated by the axe and the spade. Incredible as this may appear, it seemed as fresh as if it had been recently deposited, though afterwards proved to have lain there upwards of forty years. Upon enquiry, it was discovered that that identical spot had been a large pit, or pond of water, into which, at the time of the distemper amongst the horned cattle, a neighbouring cow-keeper, who then rented the place, had thrown in a great number of cows which had died of it. The pond was afterwards filled up, chiefly by rubbish from London. This circumstance proves the propriety of giving the fold-yard a small declination, or slope, so that no part of the dung may remain immersed, and that all the foul water, impregnated with saline particles, or even any liquid that will promote vegetation, may gently ooze into the common reservoir or receptacle. The bottom of the fold-yard ought to be formed of some substance very cohesive, so as not to admit any of the juices to enter it, and have a fall of about one inch in twelve feet. The reservoir should be made spacious enough to receive a proper quantity of roots, corn stubble, weeds, and any refuse stuff that may be collected, which will imbibe the juices as they gradually ooze in, and form a composition that, when taken out, will ferment strongly: and it would be of great advantage, when the compost hill is made, to mix with it a quantity of the strawy dung out of the fold-yard. Another considerable advantage might be obtained, if the farmer's privy, and that of every family in the parish, were furnished with a box or drawer, easily

taken out, to collect the night-soil, chamberlie, &c. which, with the ashes of the houses, soot from the chimneys, and all refuse matter, are a valuable addition to the litter in the fold-yard; for the utility arising from a mixture of different manures, all worked up with virgin earths, is wonderful.

Were this plan adopted, every load of fold and stable dung would at least be tripled, and be of much better quality than the dung made according to the present mode; and there would be no necessity to buy dung, or to fold sheep: as to collecting the roots of stubble, that would pay well, if it were only taking them off the ground, as they are highly pernicious to the fertility of the soil, and all future crops; they are as hard as wood, and by keeping the land light and open, let in the wet during winter and the sun in summer, thereby causing the destruction of many plants, and injuring the whole. It is particularly necessary to mix the night-soil with other manures, as it is a fact well known to the London cow-keepers, that if applied alone to meadows, though spread ever so thin, and a hot, dry summer ensue, it will kill every plant; but when the ashes are thrown on at the same time, they absorb the moisture, and make the night-soil divide: the expense attending this sort of care and regularity would be next to nothing. If all sorts of poultry were put into houses at night, and their dung also applied to the dung-hill, it would be found advantageous; not only as adding to the manure, but as a security from various depredations, particularly by foxes and night-thieves.

It may seem superfluous, my writing so much on the subject of manure in a treatise on live stock; but as it is one of the very great uses and profits arising from them, I have thought it not irrelevant. But the reservoir I so strongly recommend, where it has been

tried in the most correct manner, has generally fallen short of the improvement expected, in consequence of its being applied in hot weather, for the saline particles with which there is no doubt the urine of animals is impregnated, are evaporated by the heat. A nobleman formed a reservoir in his fold-yard, for the purpose of collecting the urine and drainings of the stables and fold-yard, and had the composition carried out in a proper cart, and put on grass land in his park; but although his lordship's experiment, in regard to preparation, was very correct, and he had stakes put down on different spaces of ground, at some distance one from another, on which large quantities were poured, it made so little difference in the produce, or even the verdure of the grass, that neither his lordship nor his friends could find out the spots until the stakes were found. The experiment tried by Mr. Drummond of Bawtry, was attended with nearly the same result. I have made a sort of resceptacle for the drainings of a dung-hill, and have, from time to time, thrown the mixture on the end of the hill; but that part proved weaker manure than the end not watered: the reason is obvious. From various experiments and remarks on evaporation, I am thoroughly convinced, that throwing the drainings on the hill caused it to ferment, and the saline particles, not only of the black water, but also of the dung-hill, were carried off with the air. There was another case of a cow-keeper in London, who had a very large pond, into which, winter and summer, for many years, upwards of two hundred cows went to drink; and the cows' dung and urine had formed a mass of, what every one imagined, rich manure; the quantity was so great, that clearing it out, and carrying it to his meadows, cost 100*l.*; but the result was, it proved of no service whatever. From these different experiments it appears plain, that

any kind of rich water, when exposed to the sun and wind, soon gets vapid; even urine will nearly become pure water again. I apprehend all fermentable bodies, when exposed to air, readily lose their strength:—bottled ale, draw the cork, and let it stand some days, and it will be nearly divested of its intoxicating quality. The object to be attained, therefore, is, so to contrive, as to keep and preserve the urine of cattle, &c. as pure as possible, and in the cheapest manner. To that end, all fold-yards ought to be so formed as to admit little superfluous wet; which may be effected by the building being spouted round within the fold, and other spouts so fixed as to convey the water to the outside. The next consideration is, to get the dung of the fold-yard worked up into rich or garden mould, while the black water or urine of cattle, &c. is mixed with or clinging to the straw or litter;—the management of which may be seen fully explained in the new edition of "THE EXPERIENCED FARMER," section "*Of Compost;*"—and it will be found, not only the best, but the cheapest way, to have it as quickly done as possible. I have commonly kept the compost thus formed about twelve months; for I have reason to believe it improves by length of time. If this method were followed up correctly, there would be little or no occasion for the reservoir in the fold-yard; but those mentioned for stables and cow-houses would prove of wonderful utility.

Fold-yards are generally made larger than they ought to be; cattle would thrive much better if the folds were formed so as to contain only two in each: but either store or fattening cattle succeed to much greater advantage in the open air, than in houses. This I have repeatedly ascertained while living with my father. Our practice was, to fatten the oxen in small folds, about thirty feet wide and forty long; the crib, about six

feet in length and three wide, fixed in the middle, at the upper end, and so placed, that the hay might be put in on the outside. At the lower end was a watering-place for them to drink, into which the urine of the cattle drained, and towards spring the water became quite black. They had each a separate place, at the sides, littered to lie on. The fence of the fold was sometimes faggots of furze, at others thorns; from eight to ten feet high.—This was in the marshes in Lincolnshire, within about two miles of the sea, and scarcely a tree or bush to be seen for miles, the country making a dreary, bleak appearance; and the cattle seemed to me to be uncomfortably accommodated—exposed to the cold, in snow or rain, the black water only to drink, &c. —About this time I went into Craven and Lancashire to purchase a bull; when, visiting different breeders in search of one, I met with cattle that appeared to me to have more comfortable accommodations; in consequence of which, on my return, I obtained permission from my father to build sheds, with folds adjoining, for our fattening oxen, and likewise for our year and half-year old calves. The oxen had about the same space of ground as they had had in the fold. I inclosed the folds with boards about ten feet high, and furnished them with a trough to contain clear water; not doubting that the well-doing and quick fattening of the oxen would soon pay the expense: but, behold! when about two months had passed, I began to perceive that the oxen, so far from improving, did not succeed so well as before, with precisely the same allowance of hay; and they began to rub the hair off in spots, which was an indication of a stoppage in their thrift. I had the bare places washed with tobacco-water and brimstone—a trouble to which we had not been accustomed when the cattle were in the open air: nor did they ever answer so well in the sheds

and folds. I was at that time totally unable to account for the cause. The year-olds, though their progress was nearly the same, made more waste of hay by eating out of a crib than when they ate from the ground; but they had liberty to ramble over twenty-five acres of land, and went to a pond, where cattle very generally scatter both urine and dung at the time they drink, which has always appeared disgusting to me; though, since I came to London and have kept cows, I have been completely divested of the mistaken notions which I had possessed during so many years.—I took a piece of land for the cows, to serve for what is called a cow-stand, with a ditch of moveable water along one end, which I thought a very great accommodation; but I was deceived: for the cows having to be driven through the streets and highways to this cow-stand, I observed many of them drink as they went, very often where the washerwomen had thrown out their suds. This I did not much regard; but I soon found that many of the cows abstained from drinking at the ditch of clear water, reserving their thirst to drink at those dirty puddle-holes, as if there had been no water in the cow-stand: they would sip every drop they could get; and in dry weather would seek about, going many paces out of their road, in quest of sope-suds, chamberlie, the dirty water from the washing of houses, &c. I have lived long enough to learn, that brute animals, as well as mankind, know what they like best; and that nature has implanted in them a knowledge of what is most proper for their welfare: therefore, when I consider the matter, the water where cattle drop their dung and urine being consequently impregnated with salt, it is doubtful to me whether any food or medicine could be devised to be of so much utility. The more I reflect, the more plainly the circumstance appears: beasts, when in a pasture,

generally go to some particular part of the stream, river, or pond, where they both dung and stale in the water; and that seems to occasion their constantly going to the same place, as they like the water at that spot better for the mixture. Thus, the reader will perceive I am perfectly satisfied in regard to the dirty water. Respecting the comparative benefit of a house for fattening cattle or the open air, I have no doubt; it may be seen even in the rearing of calves; and nature has proved to me, they do much better when exposed to the weather. I have every reason to believe, that rain and snow falling upon fat animals, especially cattle, as they are naturally very hot, is highly beneficial; for it may be observed that fattening oxen never have any frozen snow on them, but they frequently smoke like a boiling cauldron. Cattle that are fattening in a house, and drink clear water, often rub the hair off from different parts; and it is not uncommon for the best managers to have their cattle combed, and daubed over with some preparation or other, to stop or, as it is said, *cure* them of rubbing. Now the fact is, it is the inside that is amiss; probably some sope-suds, given inwardly, which they would take by choice, would cure the disorder; and in all probability, if they were to drink some such mixture constantly, the disease would be effectually prevented: while snow and rain cause fat cattle to perspire, which, by promoting a free circulation of blood, is essentially conducive to health. In a fold, where they lie more at their ease, they can rub or scratch themselves at pleasure, and take exercise though in a small degree, drink when thirsty, &c.; therefore the fold, when properly managed, is far preferable to sheds or houses of any description.

SECTION XXV.

Rules for knowing the Age of Cattle.

NEAT CATTLE cast their teeth, but none until turned two years old; they then get two new teeth: at three years old, they have two more; and two in the succeeding year, when they are four years old, and then called *full-mouthed*, although, in fact, they are not full-mouthed until six years old, because the two corner teeth, which are the last in coming, are not up perfectly until they have turned that age. It may be worth observation, that there is a tip on the end of the horn which falls off at the age of three years; and about that time they generally have a wrinkle near the head, after which, it is said, another wrinkle is formed every year; but I do not think that is always to be discerned on all cattle: while the jobbers and dealers can *sluff* the horn, and rasp and scrape those wrinkles out, so as to prevent the age of the beast being known by that mark.—Cattle have no teeth in their upper jaw in front.

SECTION XXVI.

Names that Cattle bear at different Ages.

MALES.—The bull, during the time he sucks, is called a *bull-calf* until turned a year old, when he is in some parts called a *stirk*, in others a *yearling bull*; then a *two*, *three*, or *four year-old bull*, until six, when he is *aged*: when cut at that age, he is called a *seg*. But if castrated or gelt, he is called an *ox* or *stot calf* until a year old, when he is called a *stirk*, *stot*, or *yearling*; at two years old a *steer*, or in some places a *twinter*; at three he is called a *three-year-old steer*; and at four he takes the name of *ox* or *bullock*. (In Ireland they call the males *bullocks* at year olds to any age.)—Some kinds of

cattle attain their full growth or perfection at six years old, others continue to improve till the age of eight or nine years.

FEMALES.—When sucking, the female is called a *cow-calf*, then a *yearling quey*, *heifer*, or *twinter*; the next year, a *two-year-old quey* or *heifer*; the third year, a *three-year-old quey* or *heifer*; at four years she is called a *cow*, which name she retains to the end of her existence.

If castrated, or spayed, she is called a *spayed heifer* or *cut heifer*, or *spayed* or *cut quey*, in most parts of the united kingdoms.

SECTION XXVII.

Buying lean Cattle to fatten.

SUPPOSING beef at 8*d.* per pound, how much per pound of the live weight should be given for a beast lean?—This question being asked at the Board of Agriculture, I have thought it might prove instructive to elucidate it.

It often happens that cattle of a good kind sell for more per pound—meaning the dead weight at that time—than they are sold for when fat; and prove much cheaper to the grazier than others of bad shapes, and slow aptitude to fatten, at very inferior prices: consequently there cannot be any certain criterion, as the best judges are sometimes greatly disappointed in their choice of very poor animals.

I have known large oxen increase during the summer, on good grass, in about twenty weeks, and from that to twenty-five weeks, from 500 to 600lb the carcase. I saw six Yorkshire bred oxen, that had been grazed in the county of Lincoln;—they were bought in at Lincoln fair, the 29th of April, and sold at Smithfield on the Monday before Christmas;—the price bought in, 21*l.*

each; the price sold at, 37*l.* 10*s.* each; the time kept, thirty-three weeks: they therefore paid the grazier 10*s.* per week each. Now, these oxen, on the average, must have increased about 500lb an ox, to obtain the price sold for; and as they had travelled about one hundred miles to market, at a season of the year when travelling is very injurious to cattle, I make not the least doubt but they had lost 100lb each: and the grazier observed, that for the last eight or nine weeks they had gained nothing, as they had been fed entirely on grass and hay; consequently these oxen must have attained the weight above mentioned in twenty-four weeks. I have stated this circumstance, being a known fact: but as it is an unusual profit, I will suppose an ox in the lean state, of a good kind, and his live weight at the weigh-scale to amount to 1,200lb; then, allowing him to be one half offal, at 8*d.* per pound, he will be worth 20*l.*; or at 4*d.* per pound for the whole of his weight, the same sum: which answers the question asked. To allow a more average profit, an ox of that size should be sold for 30*l.*, and his increase be 300lb. An ox of this size will require one and a half acre of land, worth 45*s.* an acre, to fatten him; then, supposing sheep food, during one whole year, to be worth 20*s.*, one year's interest of money 20*s.*, assessments and other taxes 5*s.* in the pound, if this be brought to account, the statement will appear as follows:—

Expense.	*L.*	*s.*	*d.*
Beast bought in at	20	0	0
Rent, 1½ acre, at 45*s.* per acre	3	7	6
Assessments, &c. 5*s.* in the pound . . .	0	16	10½
Interest on 20*l.*, at 5*l.* per cent . . .	1	0	0
Profit	5	15	7½
Total .	*L.* 31	0	0

Produce.	L.	s.	d.
Beast sold at	30	0	0
Sheep keep	1	0	0
Total .	L.31	0	0

This profit leaves the grazier above three years' rents, which is more than is requisite on grazing land, and probably more than is made one year with another, being about 7*l.*: a large ox will give him a produce of about two years and a half, with 20*s.* for sheep.

Smaller cattle, if their increase be in the same ratio, will not produce the like sum; but they are to be fattened on poorer land, and do not take so long a time. If they be averaged at sixteen weeks, there is little advantage to be made of the keep after the first three or four months; though cattle of small size during the summer, by being fat more early, obtain a better price. But as this part of the work is intended rather to shew the increase of cattle, than the real profit, I will suppose a beast of 420lb weight to be bought at 8*d.* per pound, weighed at the weigh-scale for his carcase only (or double that weight with the offal, at 4*d.* per pound), which will be 14*l.*; and his increase 180lb: then he ought to be sold for 20*l.*, for sixteen weeks' keep, which will be 7*s.* 6*d.* a week: and allowing one and a half acre of poorer land, the rent 30*s.* an acre—sheep feed the same as before, though he is not so long on the ground—assessments, &c. 5*s.* in the pound—interest 5*l.* per cent; this brought to account, will stand as follows:—

Expense.	L.	s.	d.
Beast bought in at	14	0	0
Rent, 1½ acre, at 30*s.* per acre	2	5	0
Assessments, &c. at 5*s.* in the pound . . .	0	11	3
Interest, 14*l.*, at 5*l.* per cent	0	14	0
Profit	3	9	9
Total .	L.21	0	0

Produce.	*L.*	*s.*	*d.*
Beast sold at	20	0	0
Sheep keep	1	0	0
Total .	*L.* 21	0	0

The two foregoing accounts are drawn out with an intention to shew the advantages and disadvantages of large and small cattle, and particularly the great benefit arising from rich pasture land; for I have reason to believe that a large ox, with quick aptitude to fatten, sometimes increases in twelve months as much as a small ox weighs. But this advantage chiefly falls to the lot of the fortunate man with good land: for in raising the large ox, he requires better food, and is not ready to fatten until six or seven years old—a long time for a young breeder to look forward for a return to enable him to pay his rents, many of which days recur during that period. The small-sized ox differs much in all respects:—he can be raised on worse keep or poorer land, and consequently at less expense; and he is ready to become a fattening ox at three or three and a half years old: his increase, of course, must be smaller, and the produce less, but there are two returns in the time, with not so much risque.

It should be observed, that these calculations are made supposing the cattle both good of their kind, and the management the same; but probably the average of cattle, one year with another, falls short of the given profits. The day the six oxen were sold at Smithfield, a grazier there told me he had had a single ox that paid 22*l.* for grass and hay for about thirty weeks: his increase must therefore have been 660lb, which, at 8*d.* per pound, is 22*l.*; but such an increase as this would be impossible in small-sized animals.

From these calculations it appears that a large ox increases about 3lb a day; and consequently, at 8*d.* per pound, pays 2*s.* a day, or 14*s.* a week, for his keep: and the small ox increases about 1¼lb a day, which, at the same price, pays but half as much as the large ox: therefore it is evident that large oxen are the most proper to fatten in the winter at lintseed cake, or any such expensive food; for in my own experiments with the Scotch cows, which, when fat, weighed from 500 to 640lb dead weight, they ate only one fourth less than the large Yorkshire cows, that, when fat, weighed from 840 980lb to dead weight: the increase of the latter being about double, and the saving of food by the former but one fourth, if they take but two thirds of the time to fatten in winter feeding, it comes to nearly the same thing, provided the large ox or cow keep increasing during the whole time of its feeding.

The progressive increase of animals is rather a new calculation with me; the first circumstance that brought it under my particular consideration was, the growth of a pig at Slane, which staggered me at the time, the increase being above 2lb a day. I thought it somewhat extraordinary; but probably it is not so much so as I then considered it: a cow is noticed in this work, which paid 9*l.* for about ninety-three days' keep, and beef being at that time 6*d.* per pound, her increase must have been a little more than 3¼ lb a day, to make her pay that sum. This is the most correct mode of proving the real value of animals; but although Mr. Bakewell was particularly attentive in selecting the best of each kind, he never had a weigh-scale to ascertain their increase: for when I formed an idea of publishing this work, thinking the investigation very material, I applied to Mr. Honeyborne, to know if they had tried the increase of animals,

when he gave me for answer, it was a consideration to which they had not attended.

SECTION XXVIII.

Several Disorders to which Cattle are liable, with approved Remedies for the Cure.

THE *blain.*—Provide a cane, or stick that will bend, long enough to reach into the great bag or stomach of the animal; then take a piece of soft woollen cloth or linen, but flannel is the best, put into it some tow, soft hay, cotton, or wool, to the size of an egg or a little larger, and tie it on the end of the stick (if there be a nob to the stick the better): this done, dip it in tar, and open the mouth of the animal, with one hand take hold of the tongue, while with the other hand you gently thrust the stick, with the tar upon it, down the throat into the stomach; there let it remain about half a minute, for the tar to dissolve and disperse; then draw it very gently up, the slower the better, as wind will follow, which in some cases gives great ease: repeat this three times, and the animal will be immediately relieved. After having administered this medicine, which has effected a cure in ten or fifteen minutes, I take a pint of common salt, and putting it into a quart bottle fill it up with chamberlie, shaking the bottle until the salt is dissolved, and give it the cow or ox; it operates as physic, keeping the body open, and is a safe means of preventing fever.—This disorder is caused by an angry red push in the skin, very sore and painful: and in times of infection it is a sign of the plague. It affects the throats of cattle, producing bladders of wind and water about the root of the tongue, which, if not expelled, grow large, and choak the animal.

It may not be amiss to mention how I discovered the nature of the disease, and the mode of cure.—I had a cow at Walworth that, in an instant, began to swell in her body, her eyes to extend very much, and to rattle in her throat, appearing to draw her breath in an unusual manner, as if she were in a state of suffocation. I imagined it arose from wind only, or what is termed being *blown* in cattle; and having been very successful in the cure of that disorder by this remedy, I administered it in the same manner; when, in a few minutes after it had been applied, she got better. The immediate efficacy of the medicine, I apprehend, arises from thrusting the stick or cane down the throat, which breaks the bladders (and it is for that reason I prefer flannel to linen, as more likely, in passing the root of the tongue, to have that effect); while the tar, being nauseous, causes the animal to throw up a large quantity of thick saliva, coughing and sneezing violently, and in consequence to break wind behind.

I have good reason to think this disease is occasioned by something in the air; for during my residence at Slane, when the cows were brought up to milk, there was a cow which the man did not observe to be in the least disordered as he drove from the pasture, but as he was tying her she fell down, in the course of ten minutes was blown ready to burst, and died in a quarter of an hour: the same evening one of the labourer's cows fell as his wife was milking her. I have had and known many die in the same way, when, supposing them to be poisoned, I applied sallad oil, but never saved one. The labourer's cow and mine were a mile asunder, therefore, it was not probable their deaths arose from the food; and this opinion has been since greatly strengthened. The same morning I mention my cow at Walworth being seized in this way, I went to a cow-keeper's, near Mary-la-bonne

park, a distance of at least four miles from Walworth; my cow was taken after eating hay and grains, about half past nine, and at quarter past twelve I was in the house with the cow-keeper at Mary-la-bonne, when his son entered, saying three cows had fallen down and were dying: this cow-keeper keeps about 130 cows. We went out, and it appeared to me as if all the three would be dead in a few minutes. He said they had got the *blain*, a term I had never before heard for the disease, and asked me if I knew it. I said, I did not; but observing they were affected in the same manner as my cow had been a few hours before—being all extended on the ground, their eyes starting from their heads, and their fundament and oxroad ready to strain out—I told the cow-keeper my success; he immediately applied the same remedy, and they were all in a few minutes on their feet again. I have no doubt, had I have known the nature of the disorder sooner, I could have saved many cows. The cow-keeper said, he had lost numbers in his time by it; he now and then saved one by pushing a knife through the nostrils, cutting the ears, tail, &c. and sometimes by opening the neck-vein, which was the first thing they did, but very seldom any blood followed: it was as black and thick as tar in these three cows, and I do not think they got eight ounces of blood from them all. So small a quantity of blood cannot effect a cure; but when it does happen, I apprehend it may arise from the knife being run through the nostrils, when the blood causes the cow to sneeze. Snuff might have the same or better effect, if the sneezing do effect the cure; which is very probable, by bursting the bladders at the root of the tongue.

When I returned home, I found in a book I had, a description of the disease similar to that I have given. A short time afterwards, I had another cow affected in

the same manner, when I looked for the bladders and could see them very plainly; it, therefore, seems to me, from the nature of the disease, that the remedy here prescribed must be a certain cure.

I did not bleed either of my cows, which confirms me in the opinion that it is not the bleeding merely that saves the animal, but the sneezing. The cow-keepers were not at all acquainted with the disorder, though they in some measure formed a tolerably good idea of it, supposing it to arise from a quantity of wind in the blood, which, by cutting the skin in many places, was suffered to escape. But although I did not bleed my cows, and they recovered, I would nevertheless recommend bleeding; there can be no harm in so doing, and good may by chance attend it: and I would always give the salt and chamberlie afterwards, as it is cooling, and very beneficial in all inflammatory disorders, operating as gentle physic: for the salt, being heavy, settles among the undigested food in the stomach, and causes it to ferment. After the salt and chamberlie is given, the cow or ox should be put in some field or place where there is room to walk about, and plenty of water, as they drink much after this dose, while the going to drink and returning from the pond or river causes them to take more exercise than they would in a fold, which is always good when physic is taken.

Heaving, in cattle.—A disorder somewhat similar in its first appearance to that last mentioned, though of a quite opposite nature: this disease arises from eating juicy food; or some sorts of fattening food will cause it, such as green clover, turnip tops, &c. and wheat bran will have the same effect. It has been the general opinion, that it is occasioned by the food swelling within the animal; but this is erroneous, as the cure, which is found to be easy and simple, clearly proves. The old remedy, which was, running a knife through the skin, between

the huck and the rib, into the intestines, and putting a goose quill through the incision, to let the wind out, very frequently effected a cure, though unnatural, and a barbarous, unseemly operation. But notwithstanding the nature of this disorder differs much from the last, the cure is the same. It chiefly arises from the glands of the mouth being over-abundantly supplied with saliva, which passing continually down the throat, the stomach becomes too full, and the end of the gullet or windpipe is stopped, so as to prevent the passage of the wind or breath. Many men of gross habit, after eating a hearty dinner, feel themselves similarly affected, from the same cause; but this unpleasantry may be infallibly prevented, or some relief obtained when the stomach is overcharged, by smoking tobacco. Cattle are fond of cole, turnip tops, clover, fresh eddish, &c. with which, it is said, they burst themselves; this is a very erroneous opinion, as the cure clearly shews that the complaint does not arise from the food, but from confined wind in the stomach. Any stick with a knob thrust down the throat will give ease; but I much approve of tar being administered, as, from its nauseous quality, it will cause animals to endeavour to get it up, by a kind of vomitting, which makes them throw up much saliva (I have seen them discharge as much as a quart at a time), and affords effectual and immediate relief.

I discovered the cure for the blain to be a certain remedy for this disorder during my passage to America, having cattle on board ship, which I fed with a small quantity of hay, some linseed cake, oats, and bran. I had one heifer, bred by Mr. Coke of Holkham, of the improved breed of Mr. Fowler's Rollright sort; she was of very great aptitude to fatten, and after taking her feed, generally in a morning, would be blown up ready to burst. Having seen, at the Board of Agriculture, a new

invented cane, with a knob at one end, for the purpose of thrusting down the throats of cattle that had choaked themselves while eating turnips, it struck me that the same proceeding might give relief on this occasion; and knowing tar to be excellent for the hoose (a sort of coughing to which some cattle are liable), I dipped a strong piece of rope in tar, after unravelling one end so as to imbibe a larger quantity, and put it down the throat of the beast, when I perceived wind to follow the rope as I drew it out, and the animal was immediately relieved. Now, this heifer being blown three or four times a week, the repeated operation of running the knife into the intestines must inevitably have occasioned her death; while by the mode I adopted she was restored, and fattened very much during her passage. Using the knife as above described is highly improper; it is attacking the disorder at the wrong part, for the cause of this complaint lies forward. The salt and chamberlie, which I have always administered after each application of the tar, acts as a gentle physic, and gives ease to the bowels, in which there is undoubtedly more wind at that time than is consistent with health.—The method of using this medicine being explained in the cure for the blain, I refer the reader to that article.

The disorder of *heaving*, in cattle, resembles what is called the bile in the catalogue of human diseases, and is erroneously supposed to arise from some affection of the gall-bladder; but I am convinced it is solely occasioned by a too-abundant flow of saliva into the stomach. I have myself been much troubled with this complaint, for which, after trying many things prescribed by the faculty, I found an effectual remedy in smoking tobacco; this I do immediately after every meal, spitting as much as possible. I therefore, judging by analogy, as well as from observation, am firmly persuaded that this disorder

in cattle is to be cured only by such remedies as will prevent the too great secretion of saliva, or promote its discharge when more abundant than is required for the purposes of mastication and digestion.

The *horst*, or *hoose*.—This disorder is a kind of coughing, as if the cattle have something in their throats which they cannot remove; and in the violence of coughing, it causes them at the time to force their excrement to some distance from them. It is supposed to arise from some affection of the lungs, which I have reason to believe true, from the loss a cow-keeper sustained in consequence of feeding his cows during one winter plentifully on potatoes, as before mentioned: he usually visited his cows every night, and observed those that were disordered to cough and horst in a very strange manner for some time before they died; and when opened, their lungs were found to be ulcerated: I therefore think it likely that such is the nature of the complaint. To cure this disorder, have a new-laid hen's egg in one hand, shell and altogether, and with the other hand take hold of the animal's tongue, while you put the egg as far as you can down its throat; then with the cane or stick before described convey about a pint of tar, by repeating the operation, into the stomach. This I have proved to be an effectual cure; and, what is astonishing to me, it is seldom necessary to have recourse to it a second time for a long period: therefore, if the complaint be of the nature supposed, either the tar or egg, or both combined, must be of wonderful efficacy for the lungs. The last cow to which I gave it was reduced so low by the flux, in cattle called the *skit*, as scarcely to afford any milk; and I had had an eminent cow-doctor to her, who gave her up, and, persuaded she must die, advised me to send her to Smithfield, where she would sell for forty or fifty shillings, that being more than she would fetch when

dead. After applying this remedy only once, I gave her another medicine for the flux (which immediately follows), and she recovered, came to her milk, calved, milked well, and afterwards made a good fat cow.

Purging, or *skitting*.—This is generally occasioned by starving, or low keep, which renders the intestines thin; and when the cattle come to better keep, they *skit*, by some called, or said to be, *rotten*. The cow last mentioned was in this condition; and the doctor was recommended to me as being particularly famous for curing this disorder, or I am generally my own cow-doctor. But I never before knew a beast cured that was so bad as this cow. Knowing that almost all complaints arise from the stomach being in an improper state, I considered the case, and took the following method for cure:—I put about four ounces of chalk, beaten to a very fine powder in one quart of the lees of red port, which I prefer when they can be obtained; having mixed them well together, I gave it to the cow, and three doses, one every other day, effected the cure. I have since given it to two other cows, and it has had the desired effect.

Another cure for purging.—Take fern roots, the sort that grows in fields, a large handful, and boil them gradually in two quarts of sweet milk, until reduced to one quart:—give this lukewarm.

To prevent the black-leg.—This disorder is much more common in Ireland than in England, which renders the idea many persons have, of its being the bite or sting of some poisonous reptile, improbable, as it is said there are no venomous animals in that country. I have no doubt it is the state of the blood; and there never has been, nor do I believe there ever will be, any cure for it; for if the blood be in a state of immediate putrefaction, there is no time for cure, as it is instantaneous death; consequently, prevention is all that can be expected. While I lived at

Slane, we had, in the month of October, about thirty calves, from ten to fifteen weeks old, when one of the famous breed, from Union, died of this disorder. This alarmed me very much, as I had been told, that some breeders had lost their whole stock by this disease, which was by some thought to be an epidemic: however, although I had never seen it in cattle (I had in sheep, my father having lost six or eight out of thirty), I immediately had every calf bled; and in three days afterwards, I had them all rowelled, by some called *buttoning*; which is done thus:—shred bearsfoot (an herb) and garlic, an equal quantity of each; then bruise them together, and mix them up with a little fresh butter: having cut a nick in the dewlap, raise the skin on every side so as to contain a small portion of the mixture, then, with a needle and thread, give the skin on each side the hole or cut a stitch or two, to keep the mixture from dropping out: if onion be applied instead of garlic, it will make no great difference. This disorder in Ireland is seldom observed to happen to poor men's calves, from which it is imagined that it only attacks animals with rich blood: I, therefore, reduced my calves' food; and as there were not any more affected, I have reason to believe it a good preventive.

Staling blood, or by some called *the bad water.*—This is known by the urine being high coloured, which by many is supposed to be mixed with blood; but I apprehend that to be a mistake: it probably arises from fever, as the cattle are immediately off their food, and their nose dry, horns and ears cold, all indicating that state, which renders the urine of a high colour. Costiveness directly follows, frequently occasioning the death of cattle in this disorder; it is therefore highly essential to keep the body open without increasing the fever, an effect in which I have never found the following remedy to fail:—

Take two or three handfuls of stinging-nettles, and boil or stew them slowly in three quarts of water until reduced to about one quart; when cool, give it the beast: then, having ready a pint of common salt put into a quart bottle filled up with chamberlie, shake it well until the salt be dissolved, and immediately give it to the beast. This remedy I believe to be infallible: and my success in this disorder has led me to many other discoveries.—It is a doubt with me whether the nettles have any thing to do with the cure; as I have known this disorder cured with butter-milk and pig's dung, and a frog with a large quantity of cold spring water: but I have known each of these remedies to fail; the former prescription never.

Tail-worm.—This disease seems to be a decay in the spine of the back; it is situated at the bottom of the tail, within about three inches of the end, where there will be a separation, the bone being by some means gone, supposed to be occasioned by a worm (hence the name of the disorder), and some cow-doctors pretend to have found it, but I never saw any thing of the kind. If you take hold of the tail and turn it upwards, the end will drop down; or with your fingers you may perceive a separation of the bone. The symptoms by which it is known are, when the beast attempts to rise, after making an endeavour, he will drop down again, at first once, then twice, until at length he is totally unable to get up. For want of knowing the disorder many cattle have been destroyed, by applying medicine, lifting them up, hanging them in slings, &c. as the beast is not perceived to lose his flesh before he falls, nor does he refuse his food. The remedy is, to cut a piece off the tail end, and let it bleed; if this be thought disfiguring the beast, slitting the part will equally effect the cure. Farriers open the tail, and put in some sort of salve, either through ignorance,

or by way of making a bill; there being no necessity for such an application, as I have made a cure by cutting the tail only, after the animal has been unable to rise for several days. If he be down before the disease is discovered, he will eat his food, as it causes merely a weakness without sickness; but, ever since I have known the great efficacy of chamberlie in all cases, I have given that, as by the beast lying, for want of necessary exercise, he may be bound, which will cause a fever; it is at the same time a security against any further complaint, may be of service, and cannot injure. A fat beast is equally as liable to this disorder as a poor one. I attribute it to a caries of the internal parts of the bone; amputation, therefore, is the readiest, safest, and surest cure; only be certain to cut the tail a little higher than the diseased part. If down, they generally rise in two, three, or four days, at the farthest. Some persons lap the tail up with salt and onion; but it seems to me, from my experience, unnecessary; the bleeding, being exposed to the air, gives new life and vigour, for the cutting alone has never failed to effect a cure.

Foul in the Foot.—This disorder generally happens on low, wet land, or in wet weather, and seems to arise from cold: it is to be discovered by the foot being swelled between the hoofs, or claws; is very painful, and shews itself in a tumour, very much inflamed. A poultice would undoubtedly be the proper remedy, but it is in such a part impossible to apply it. The most general practice with farriers is, to apply tar and quick lime, to hasten the suppuration of the tumour: and they draw a hair-rope backwards and forwards between the claws, to promote a quick discharge. Some apply verdigrease with the tar and lime, but it seems unnecessary, as I have used them all; and, after opening the tumour with a sharp knife when it appeared ripe, each of these applica-

tions has worked a cure. My father's method was, to cut up a sod where the diseased foot had trodden, and either turn it over, sward-side downwards, or hang it on a hedge in that position. I am unable to account for this cure; to me it is incomprehensible; but in all the experiments I have tried, this remedy, so simple and cheap, has proved the best. The first year I was at Slane, we had many cattle troubled with this complaint; I applied nothing else but what may be called a charm, and they all more readily recovered than when I used severer applications: therefore, in future, I mean never to have recourse to any remedy but the sod; though probably rest is the grand restorative.

Gargle.—This is an inflammation, first discovered by a swelling of the paps (and sometimes by a soreness in the limbs), which keeps increasing until the udder is very much inflamed. It often happens to fattening cows, but more frequently on some lands than on others; so much so, that on some marsh lands in the county of Lincoln a cow cannot be fattened, nor even a heifer that has never given milk: an ox likewise has been known to have it. When it affects milch cows, it most commonly arises from bad milking, which occasions a congestion of milk in the udder. During the time I lived at Slane, where we milked upwards of forty cows, several of those that were dry for calving, and one heifer that had never given milk, had this disorder, when our Cheshire dairy-man used to rub the part with cold spring water and Castile sope, always bleeding them, by which means he readily brought them about; I therefore think that a good remedy. The rubbing is thought very essential; he would rub them for nearly two hours a day, an hour at each time. I should recommend, in all cases, to give the salt and chamberlie, and that in a morning, when the cows are going out to take exercise, where they can obtain plenty

of water. I have given it at night, but I found that improper; it did not operate in the same manner, for want of exercise and water. It is an almost general custom to give cows four ounces of Glauber's salts; but I much prefer the salt and chamberlie: and remember, *no warm water*. When cows are so affected, great care should be taken to draw out the milk or whey as perfectly as possible: and there will frequently be lumps of corruption in the veins, which retain the whey or milk behind them; therefore, they should by all means be got out, or the further generation of matter will be promoted. If this disorder happen to be neglected until the udder appears unnaturally distended, and violently red or inflamed, it is then necessary, after drawing every thing that can be forced out of the paps, to rub the part with marsh-mallows ointment, goose-grease, linseed oil, or elder leaves, boiled in milk to a pulp, with an addition of hog's-lard; all these things are very good: house-leek, white lily root, and good rubbing, will mostly effect a cure. Some people cut off the paps of the cow, which is both cruel and unnecessary: I do not approve of any such harsh methods. But, after all these remedies, there is nothing equal for any violent inflammation, if the trouble be not thought too great, to fomentations made with cow's dung and chamberlie, into which may be put either elder leaves, white lily roots, wormwood, rue, groundsel, or marsh-mallows, or many other plants and herbs: and although this disorder happens at a time of the year when the grass is in a fruitful state, salt and chamberlie given would be a means of prevention, as it never attacks cattle fed on salt marsh land.

Yellows.—This disease is known by the eye of the cow (the upper part first) turning yellow, and in a little time afterwards the skin turns of that colour, so as to appear through the hair in every part. As a remedy for this dis-

order, some persons boil about eight ounces of saffron in a quart of milk, and give it to the animal. Another medicine, mentioned by Mr. Billingsby in his Somerset Report, and said never to fail, is, two ounces of flower of mustard mixed with any liquid, and repeated two or three times in twenty-four hours. This disease has never fallen under my immediate observation; all the other complaints herein described have, and the efficacy of the different medicines given has been fully proved.

Grain-sick.—For this disorder I have always found the salt and chamberlie an effectual remedy. It should be given in a morning, either fasting, or after the cattle have been fed, if they do not loathe their food, which is generally the case; and they should then be turned into the cow-stand or pasture, exercise being an essential in the cure of this complaint.

Moran.—This is to be known by the cow going about in a very solitary manner, with a sort of moaning or grunting: the ears and horns very cold. Buttoning or roweling is the usual remedy, and generally effects a cure.

To make a cow cleanse after calving.—Take a red-herring, and boil it in one quart of water, until the fish is dissolved; and when cold, give it to the cow. This medicine I have used only twice, when it had the desired effect; both the cows cleaning in the course of two hours after the dose being given.

A general Drink for Cattle.

Take four garlic heads, one quart of new milk, three spoonsful of tar, and three spoonsful of sweet oil. This is a gentle physic, and a diuretic at the same time.—Chamberlie is equally as good as the milk, if not better.

The following recipes were received from a man formerly a manager at Mr. Richardson's cow-yard, Grays-inn-lane, London, who was said to keep at one time 999 milch cows.

To make a cow cleanse after calving.—Take two ounces of mur powder, one ounce of diapaint, one ounce of the tincture of myrrh, and boil them in a quart of milk.

To cure a cow of the gargit in the bag.—Give eight ounces of salts, dissolved in a quart of water: this must be repeated three times every other day. Rub the bag well once a day with an ointment made by boiling four ounces of mallow ointment in a pint of malt vinegar; and draw the paps well three or four times daily.

To cure a beast of the maw-bound (in London generally termed *grain-sick*).—One pound of goose-grease, boiled in a quart of milk, will give immediate relief, with one dose.

To cure a cow of the gargit within, after calving.—Take three ounces of nerve ointment, three ounces of mallow ointment, three ounces of oil of turpentine, one ounce of yellow rosin, and dissolve them over a slow fire, stirring the mixture until cold.

To cure the foul in a beast's foot.—Take half an ounce of goulard, half an ounce of butter of antimony, half an ounce of the oil of olives, mix them well together, and, first cleaning the part with a hair rope, apply this ointment once a day.

To dry a cow of her milk, without a drink.—Take four ounces of old tallow, two ounces of bees-wax, half a pint of vinegar, half a pint of tar, six ounces of spirits of turpentine, and boil them till thoroughly incorporated. Dress the bag and the milk veins with this composition, and it will turn the milk to water in four days.

GLOCESTERSHIRE SHEEP.

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CHAPTER II.

SHEEP.

SECTION 1.

THE various kinds of sheep, so far as relates to their value—the average and greatest weight of the carcase—the seasons of the year when the mutton is most in season—and the age at which they are generally killed—have been taken from the "*Salesman and Cutting Butcher;*" and I shall arrange them in a table, that the reader may at one sight be enabled to form a comparison: I have added some further remarks and observations of those men, which relate entirely to the London markets; but these being the principal, furnish the most correct criterion that can be obtained, when brought under one general head.

SYNOPSIS

OF THE

Different Breeds of Sheep in Great Britain.

	COUNTIES.	Aver. wht. pr qr. *lb.*	Grt. wht. pr qr. *lb.*	Age when killed.—Remarks and Observations.
1	Dishley, or new Leicester	20	45	two years old generally; in season five months, from June; worth more per pound than some of equal weights.

COUNTIES.	Aver. wht. pr qr. lb.	Grt. wht. pr qr. lb.	Age when killed.—Remarks and Observations.
2 Lincolnshire .	22	53	one third two years old, two thirds three ditto; five months in season, from May to September; worth as much as Downs; have most lean flesh: some of the coarse Lincolns are partly a straw colour, called yellow.
3 Gloucester .	22	52	two years old generally; are as good mutton as Lincolns; have more loose fat, and dark flesh; much lean intermixed with fat.
4 Durham, or Tees-water	24	62	three years old generally; produce two, three, or sometimes four, lambs.
5 Dartmouth Natts . . .	16	22	two years old generally; mutton equal to Downs.
6 Exmoor . .	16	22	two, and two and a half years old. Good mutton.
7 Dorsetshire .	19	30	two years old generally. Equal to any of their weight.
8 Herefordshire 9 Ryelands . .	14	22	three years old; equal to any mutton.
10 South Down .	18	36	one year and a half old; worth more per pound by 1*d.* than any of their weight; in season from January to April.
11 Norfolk . .	18	32	two thirds two years old, one third three ditto, good mutton from February to April; not saleable in summer: good sheep not worth so much as Downs by ½*d.* a pound, and inferior ones from 1*d.* to 1½*d.* a pound.
12 Nottingham Forest . .	16	24	three years old; equal to any mutton.
13 Herdwick . .	14	19	four and a half years old; ditto.
14 Cheviot . .	16	22	ditto; ditto.

COUNTIES.	Aver. wht. pr qr. lb.	Gr. wht. pr qr. lb.	Age when killed.—Remarks and Observations.
15 Dun-faced .	7	12	four and a half years old; equal to any mutton.
16 Shetland . .	8	14	ditto; ditto.
17 Welsh . . .	11	16	three years old; no better mutton when fat; the greatest price in winter.
18 Pennestone .	12	16	four years old; equal to any mutton.
19 Cumberland .	12	16	ditto; good mutton from July to October.
20 Westmoreland	12	16	ditto; ditto.
21 Northumberland	21	50	two, and some three, years old; as good mutton as any: large, long-woolled sheep, mixed very properly with lean and fat.
22 Warwickshire	23	50	two and three years old; as good as Lincolns.
23 Oxford . .	23	50	ditto; equal in mutton to Lincoln and Leicester, and rather better liked.
24 Hertfordshire	22	52	three years old; good mutton from January to May; sell well for haunches.
25 Kent . . .	21	55	three fourths two years old, one fourth three ditto; equal to any large polled sheeps' mutton.
26 Berkshire . .	21	32	two years old; mutton lowest price of any.
27 Wiltshire . .	25	58	three years old; equal to any of their weight, from January to April.
28 Hampshire . .	16	26	two years old; equal to Dorsets.
29 Portland . .	8	12	three years old; mutton said scarcely any to equal.
30 Merino . .	8	16	two and three years old; good mutton as Welsh.

COUNTIES.	Aver. wht. pr. qr. lb.	Gr. wht. pr. qr. lb.	Age when killed.—Remarks and Observations.
31 Spanish . .	8	16	two and three years old; good as the Merino nearly.
32 Irish . . .	23	40	ditto and ditto; very good mutton from May to December.
33 Wicklow-hills	13	22	three and three and a half years old; excellent mutton, from May to November.
34 Isle of Man .	5	8	three years old; mutton equal to any kind.
35 Do. another kind,	12	18	two and three years old; good mutton.
36 Somersetshire	20	40	three years old; mutton equal to Gloucesters.
37 Do. another kind,	19	33	two years old; equal to Dorsets.

In the preceding synopsis thirty-seven different kinds of sheep are given, many of them varying in their weights, the quality of the mutton, and season of the year when their flesh is in perfection; which latter circumstance arises chiefly from the quality of their food, as when that is in a state of perfection, the mutton will in a short time become so too. This may be seen in the rich marshes of Lincolnshire, where the mutton is in perfection from the beginning of May till September, it being chiefly a grass county: and although there are many sheep brought from that county at all seasons of the year, and from different sorts of food, the cutting butcher always gives the preference to those fed on grass, even of the very same kind of sheep, and from the same parish. Some are fed on coleseed, as it is called, though in fact it is the plant of cole, which being strong and rank communicates the same unpleasant flavour to the flesh, and may be seen by the back bone, when chined down, looking black, not the natural

colour of the grass-fed mutton. As a contrast, in Norfolk, which is a turnip county, the mutton is in perfection from February till April, and not saleable in summer. In Cumberland, where the best mutton is produced, or at least it is as good as any, the sheep are in perfection from the beginning of August till September; which arises from their being fed on heath when in blossom, and other mountain plants. I remember being once at Whitehaven in the first week of October; and having heard of the delicacy of that mutton, I ordered some for dinner, having a party to dine with me; when the landlord at the inn told me, I should not like it, it was then out of season, and poor dry meat: however, out of curiosity, with other things, we had a leg of mutton, and very inferior it proved. I have particularised these three different kinds of mutton by way of comparison, to shew the reason why the cutting butcher has given separate times for the various breeds of sheep being in season. Thus it appears by these remarks, and by many experiments and observations which will be recorded in this work, that the flavour of meat very much depends on the food, more than on the breed or the nature of the animal's flesh: and a principal reason why small animals are generally found to be sweeter and more delicate meat than large, is, they require less time to fatten; from their small quantity of flesh, they much sooner gain the necessary proportion of fat to render it agreeable to the consumer. An instance has been mentioned (see page 167) of a cross of a half English and French cow being killed in the Borough by Mr. Reynolds, which proved the very worst carcase of beef I ever saw; while a large Yorkshire ox proved, contrary to every person's expectation, a remarkably good carcase. I have reason to believe, if the cow had been taken at a more early stage, she would have been very different; on the other hand, from the size and extraordinarily coarse make of the large

ox, he required more time to attain perfection, and therefore had he been killed sooner, he would have died not so fine beef. It has been repeatedly determined, that the poorer the animal is at the time he is put to feed, and the sooner he fattens, the more delicate is his flesh in flavour; and as both the cow and the ox had been kept some time for show, the cow had become strong and oily, as almost all artificial food has, more or less, a strong smell and taste: and another thing stall-feeding, being contrary to nature, is an unhealthy practice, which in time must injure the flesh; for, as may be seen, all stall-fed animals are apt to rub, which is occasioned by the scurvy, and an animal killed when infected with that disease must be bad in flavour, and the flesh less wholesome to the consumer.

It may also be proper to explain how the London salesmen and the cutting butchers are enabled to determine as to the perfections and imperfections of so many kinds of sheep as have been here enumerated, some of them bred at very great distances from the metropolis; a circumstance which has astonished me. At the time I was collecting information, when making enquiries respecting the Tees-water sheep, thinking they were one kind in particular which it was very unlikely had ever reached Smithfield market, I ventured to ask the cutting butcher if he had ever killed or cut up any of them, as I had never seen any at that place; when he very readily replied, Yes, he had, and he wished he had an opportunity of killing many more of them, for they were the most profitable sheep he ever did kill; and he observed, to his shame it might be said, the first lot he ever bought and butchered he laid them at 4lb a quarter less than they weighed. Thus, it will be seen, where I give an opinion for or against any of the different sorts of sheep, my information is derived from the same source as that of the cutting butcher—from seeing the animals

cut up, to which I have paid great attention; I have thereby learned where their perfections and their imperfections lie, and am enabled to describe the most useful and proper shape of a sheep, which I will give in a ram. Sheep, be they of what kind they may, should be of one make, with very few exceptions; though a ram and an ewe should differ, which I shall explain hereafter.

SECTION II.

Description of the Ram.

BEGINNING at the head—His mouth should be small, with thin lips; the fore part of his face narrow, and rather long-visaged; his eye quick, having a lively appearance; his ears neither particularly long nor short, but thin, and sharp at the ends; the crown of his head fine and narrow, for when that part of the head is broad, the lambs frequently stop at the crown in yeaning, which causes frequent loss in the ewes; and by the crown being fine, the ears will stand near to each other, as will the eyes: his ears and head should have smooth hair upon them, sufficiently set to protect them against the sun and from the ravages of flies in summer, and the severe frost and cold in winter; and there should be a small portion of wool on the crown, called a topple, to prevent flies from galling the head; but by no means wool on the sides of the cheeks, or on the face, further than the back of the ears, so as to be muffled like an owl: his neck, near the head, at the back of the crown, ought to be rather fine close to the ears, but to increase very quickly, and be strong in the withers, so as to be well filled with flesh in joining the shoulders—to have what the cutting butcher calls a good scrag, and be heavy in the neck vein, before the shoulders; his shoulders at the top

should be broad, but rather round, well filled with flesh, not on any account hollow between the blades, nor should the blades be so high as the chine, for that space being well filled with flesh is an indication of meat in all useful parts; and although it has been thought by the best of judges, as breeders, a recommendation for sheep to be hollow there, and along the back, even to the loin, the cutting butcher finds sheep so made to be light fleshed, and generally, when made fat, deficient in flesh in proportion to the fat, consequently it becomes a prodigious fault. He should be somewhat higher before than behind, having a gradual descent to the tail, which will give a sprightly look, and when he is in a pen, in the market, cause him to keep his head up, like that of a game cock:—a sheep so made will travel much better than one low before, with his head depressed. His breast end should be full, and well extended between the fore legs, pushing much forwarder than his knees; his arm, down to his knee, well-filled with flesh; his out-shoulder the same, to cover the blade bone; and the joint below should be what is called *fine*, that no joint or bone may appear when he is naked, or sheared, which is unsightly, and denotes coarse flesh: he ought not to have loose skin on any part, particularly from his under chap to the end of his breast, which is often observable in bad-bred sheep, called *leather*; his fore flanks, or what are called the plates in cattle, should be strong, to hold up his belly, and prevent his being gutty; his back broad, and full of flesh, and continuing of a regular breadth along the loin and rump to the tail: he should be lengthy in his carcase, particularly in his rump, and the width continue to the setting-on of the tail (not to be what is termed *wiped away*, viz. to begin declining from the hucks towards the tail, until the rump near the tail is very narrow): his tail should stand low, though not so as to

be goose-rumped, but well cloven, forming a good cushion, or what Mr. Bakewell used to call a *fool's-cap*. Mr. Bakewell had a sheep he called *Rumps* (the largest in that part I ever saw one). The part of the tail that joins the rump, which is termed the *strunt*, ought to be very thick, and full of flesh and fat, but declining regularly towards the bottom end, which should be very small; his hucks formed round with the last rib, and the end so proportioned as to lie in such manner as not to appear raw-hucked, and not farther out than the last rib, lying rather within, and the rib so near to the huck that, even with an empty belly, he may not look hollow, but well covered with flesh and fat, so as to have a level appearance: his ribs, from the shoulders to the hucks, ought to project one a little farther out than the other towards the hucks; and the ribs should be round, but not short, and well let down in the side, or what by some breeders is called of *good mould*;—for many fashionable breeders have had such a dislike to sheep being gutty, that they have bred them for short ribs until, when they travel any great distance to Smithfield, they look as if their entrails had been taken out, and they have no guts at all, which is become a vile fault: such sheep are found to prove very light in the scale, and the butchers detest them; therefore the extreme of round high ribs should be avoided, and a regular proportion be observed—to be formed like a good-carcased horse for the road, capable of bearing the fatigue of travelling, with the least injury possible. His flank behind should be full, and extended to the cod; his twist, viz. the part between the thighs, also full, and the lower he is cloven between the thighs the better, so that his cushion (which is the part above the tail), twist, and cod, may all join: the outer part of his thigh should be full of mutton, as near down to the hock, or cameril, as nature will admit; not to go wide

behind, in such a manner as some sheep do, bending outwards, which is a weakness, and is the cause of their becoming leg-tired in traveling, and sometimes spavined like a horse, and lame;—I mean he should not be wide in the haunches, and narrow with his feet;—sheep so made, are generally light in the inside of the thigh, with much loss of weight on the best part of the leg of mutton, and always short of fat, as they are sure to be bad in the twist. His leg should be straight, and full of mutton, inside and out; the leg bone, or ten bone (being the bone from the fetlock to the hock), straight; the fetlock short, and straight: his hoof should be round; the fore leg straight from the fetlock to the knee, to shew as little joint as consistent with nature, and by no means large knee joints; his fetlock short, and not on any account to tread low, in a bending manner: he ought to have a sort of short hair on the legs below the knee, and likewise on the hock or cameril, but nothing inclining to wool on those parts: the bones of his legs should be properly proportioned according to his size; the fore leg round, the hind leg flat, the substance of bone being in a middle proportion, not very large, nor yet small, for great errors have been committed by producing extremely small bones, as will be shewn under the head of offal;—neither extreme is proper. He should be well planted with wool of equal quality: if long wool, not shorter than ten inches; on the belly, brisket, and those parts, the longer the better; and if rather thin set below, on the middle part of the belly, it is a recommendation, but it should gradually become both longer and thicker set as it approaches his sides, so as not to be what is called *easked*, viz. at each side of the belly having a sort of mossy short wool between the belly wool and that of the carcase, which is a loss in weight, as well as being of worse quality, and, as the sheep grows

older, an indication of what is termed *stripping*, that is, casting his wool before the time of sheering; and in breeding ewes, of becoming bare bellied—which is a fault so much noticed, that correct breeders, such as my father was, give them a separate mark when they are shorn; to know them at the time of choosing the ewes proper to breed from (what is termed *draping* them), as they are liable to cast their wool in other parts as well as the belly. The wool should be fine and long all over his upper parts, even his thighs, and of nearly the same quality on the top of the back; not mossy along the chine of the back, which is not only a loss in weight, but occasions the stapler much trouble in what he terms breaking the fleece—that is, sorting it for the use of the manufacturer; and a fleece having many kinds of coarse wool on the thighs is of low value, fit for nothing but listing; the mossy part is not proper for either carding or combing, it being apt to comb into knots, and is consequently to be picked out, and, fit for no purpose whatever, is thrown to the dung-hill.

The wool should be in regular staples, of moderate size; nor ought they to be such as drop one from another, like pins of wood, but joining each other in such a way that the fleece may hang together, and the staple be of one regular substance from the pelt to the outward end; not having hairs appearing at the outside, nor looking rough as some sheep do. There is another sort of hair on some sheep, called *hemp* hairs, which is a sort of short bright white hair, rather remarkably so, and like the hair of some dogs; it will not work as wool ought to do, or even take a dye. This hair is to be found in the inside of the wool, most generally on the thigh, and ought to be particularly avoided:—a remark made by Mr. Luccock in his treatise on wool. There ought to be no tag, or curl, at the end: as that is

another waste, and must be clipped off before the wool can be used—an expense, and entire loss. Wool ought, when taken hold of, on the sheep's back, and squeezed together, to seem to resist the squeezing, and rise quickly to its former position, feeling full in the hand; and when the shearer is sheering, it keeps rising, like a drift of snow, higher and higher, so as when cut off to form a very large bundle according to its weight. The skin or pelt should be of a bright red cherry colour, not having either spots or freckles on any account; nor should it be either thick or thin in the extreme: a very thick pelt denotes coarse flesh, and a hard or bad feeder; although there are very fat sheep with thick pelts, and very poor, bad thriving sheep, with extremely thin pelts: but there is no general rule without an exception. I have seen as great an objection to extremely thin pelts as I ever did to the thick: those sheep with very thin pelts cannot bear the vicissitudes of weather;—in cold severe frost and wind they are starved, by the skin of their faces and legs being exposed; and although very fat before, and quick fattening sheep in moderate weather, in storms of snow, &c. they will waste away like a candle, and creep into hedges, briars, furze, thorns, &c. which may always be discovered by their necks, and the outward part of the wool: on the other hand, in hot weather they are burnt, and teized by flies. It is on this account that the new Leicester ram breeders are compelled to clothe their rams—an expense and trouble that cannot nor ought to be put in practice in large store flocks; and therefore proves the extreme of thin pelts materially wrong. On the thick pelt is frequently found wool that cots; occasioned by the quantity of grease that lies between the two skins, which is called *yoke*:—this, under the head "PELTS," will be more fully discussed. These observations have all been made on long or combing wooled sheep: but the short

or clothing wooled sheep ought not to vary in any other respect than in the length of the wool, which should be very short, and thickly planted; Mr. Luccock, in his most valuable treatise on that subject, says it cannot be too short: a further quotation on this subject will be given in the course of this work.

There is a very improper sort of long wool, that has not been here noticed. Mr. Luccock mentions as a fault in wool, its being too weak for combing, which is an object of particular consideration to the manufacturer: this sort of wool is to be found most generally on the new Leicester sheep, by breeders and graziers called *feathery* wool, and by some *watery* wool, although they are two sorts, varying much from each other. The feathery wool is very thinly set upon the pelt, and falls closely together; when shorn, it laps up in very small bundles, and weighs heavy according to its substance, but the whole fleeces are of light weight. This is a very great fault in any wool; and, notwithstanding its weighing heavy according to quantity, it is very rarely that the fleece, without regarding the quality, pays the breeder or the grazier so well as wool of a more proper staple. It often happens that the fattest carcases are found under this kind of wool; and as Mr. Bakewell's particular object was, to produce fat, it was a sort greatly preferred by him, and has been the cause, where his sheep have been much introduced, of lessening the weight of long wool one fourth, and rendering it of a worse quality. But Mr. Bakewell's opinion, that a pound of mutton was worth more than a pound of wool, and that wool and carcase could not be obtained on the same sheep, under an idea that the food taken by animals is applied to separate uses—saying, if it fed the carcase, it could not feed the wool—was very erroneous: of which strong proofs will be given under the head of

"Offal," in this work; and in my report of Rutla
will be seen an authentication of the loss of weigh
wool is weak and curled, and breaks much in co
The watery wool is of another very bad qualit
rarely found on the Dishley sheep; much mo
quently on the coarse kind of Lincolnshire breed
up in small bundles, but the quantity in we
generally very considerable. The term given
watery, is perfectly appropriate; as it is so full of
that it looks quite damp, and a stranger to th
of wool would be sure it was wet: high food re
much more so, particularly turnip feed. I will re
anecdote that happened when I was in Irelan
hogs (lambs after being weaned) being high
turnips in the winter, there were two or three flee
the pile of this quality; and the high feed had
them to be so heavy, that the buyer, seeing them
declared they were wet, for even to the feel the
so; nor could I convince him to the contrary,
the smell—as wool that is shorn wet will lose its
scent, and smell fusty. This is a very bad sort o
and on poor keep is frequently cotted; but at al
of objectionable quality for the manufacturer.

It is remarked by the cutting butchers, th
mutton of some of the Lincolnshire sheep is str
loured or yellow. As this occasions great loss
sale of the mutton, too much caution cannot be t
avoid it, as it proves to be hereditary; therefore
the ram is young, at the time the tail is cut, th
should be particularly examined, to see if it be
for much injury may be done in a flock by maki
of a ram with yellow flesh. Mr. Luccock, in pa
has made a very judicious remark, where he
"peculiar care is necessary in choosing rams, to
the staple;" and I can safely assert, the male

communicates so much of his natural properties to the offspring, that were a ram with yellow flesh put to ewes, it would be not unlikely for the flesh of three fourths of them to be of that colour.

In the choice of a ram, it is necessary to correct a very erroneous opinion which has been formed by the pupils and followers of Mr. Bakewell—that it is proper to select rams with fine diminutive features, as nearly similar to an ewe as they can be obtained, with small bones, &c.; for the offspring of such rams are worse liked than many other kinds of sheep by the cutting butchers: they have bred them *too fine*. This, therefore, proves, what common reason dictates to every man, that a ram should be larger limbed, with more bone, and stronger features, than an ewe or wether, having the masculine appearance of a ram:—this subject is more fully investigated, and its propriety established, under the heads respecting the breeding of pigs and cattle, in which I have found the necessity of its observance more particularly evident.

SECTION III.

Observations, and Reasons given for some rather singular Remarks in the foregoing Section, differing from what the first-rate Breeders have thought right, and contrary to the Opinion of Critics.

My ideas respecting sheep have been greatly improved by seeing the cutting butchers cut up the delicate new Leicester sheep, and by hearing the conversation of salesmen and butchers in Smithfield market: at the same time, intending to publish this work, no attention or enquiry has been omitted, to enable me to state facts. And first, in recommending a small mouth,

bone and fat, two things the consumer little wants. The loin is equally found deficient of flesh, both within and without; and when there is much flesh along the back on the upper part, there is more found within, and consequently less occasion to pare off so much fat. The part between the shoulders, the chine, I say should be higher, and not hollow, or cloven like a cart-horse, as was once thought right; the butcher detests that make, the hollow being caused by a want of flesh: it ought to be well filled up, as by the sides of that bone there is much fine meat, very much liked by all consumers. When the butcher shews me a fine sheep, such as suits his trade, he says, "What a fine chine he has! he cuts the depth of an ox;"—viz. when the middle bones between the shoulders are long. An inch of those bones in length weighs very little, particularly when they are divided, every other one to each neck; there are then but six in number to each, the weight altogether not being increased, at the most, more than one ounce, from being an inch longer than the bones of sheep formed with a hollow; but an inch of flesh along the neck will weigh some pounds, as it does not only extend in depth, but in breadth likewise: on the other hand, if these bones be short, the butcher calls it a bad chine; and that remark proves itself right, for if the bones be short, there must be a want of flesh. The rump cannot be too long, or too wide: and I have remarked the propriety of the rump continuing its breadth to the tail, and even recommended what Mr. Bakewell called in derision the *fool's-cap*; for when a sheep has that part large, he must be wide: that part all cuts to the leg, where it is sure to prove useful, affording the very best fat about sheep. It has been, and ever will be, the part the butcher handles the first, then the loin; the lower parts the last: therefore, if there is nothing inviting in those parts of

the sheep, he examines no farther, but leaves them; consequently they are generally sold at an under price, according to their size and weight, for want of cushion. The leg I have next recommended to be thick, without and within, let down to the hock; which is diametrically opposite to the most fashionable new Leicesters, as the legs of many of them are formed like those of a grey-hound dog, the thigh bone being remarkably long and light of flesh: this, in a great measure, arises from an extremely fine head and a thin scrag. I have some doubt whether it be possible to breed a sheep with a large well-formed leg and a thin neck; for, as the cutting butcher very properly observes, the flesh of animals descends; consequently, if he be not formed with flesh on the chine, he will be light in the leg; and a leg of mutton never was known to be too fat, or too large, for the size of the animal, therefore it becomes necessary to add as much weight to the hind quarter as possible, which cannot be done by thin scrags. The breast is the last joint I have recommended to be wide, between the fore legs, &c. but not with any view to profit, further than as bearing a regular proportion with the rest of the carcase; for the breast of mutton is the least valuable part of the sheep, selling, on an average, at from 1*d.* to 2*d.* a pound less than the hind quarter. It is now, in proportion, one of the heaviest joints in a new Leicester sheep; and, by dint of feed, a large mass of fat, of a light frothy nature, is laid on the fore flank, a part where it is not wanted; as in the breast, with which one part goes, if a sheep have any fat about him, those is sure to be enough: while the shoulder, to which the other part goes, is another fat joint, and of less value than any other, except the breast: altogether constituting such a form highly improper. To shew the further necessity for improving the hind quarter, and the profit thence

arising, it may be observed, that in London, in the shop of a genteel cutting butcher, he sells ten hind quarters of mutton to one fore quarter; and very few breasts are sold in such shops, being chiefly sent by large quantities to some poor part of the town, and retailed, on the average, in the lowest and worst markets, at 2*d.* per pound less than any other part.

The tail standing low is contrary to the general opinion, though not a new idea with me, having known it long ago. I have stated, the fat of the cushion should come down as low, or a little lower than where the tail is set on; which fat, descending, spreads and settles on the outside of the leg. The bone of the leg, I have observed, may be too small: the critic will doubtless condemn that opinion; but what has he done by breeding small bones?—he has reduced the size in such a manner, that there are lots of new Leicester sheep brought to London, and sold at Smithfield market, of the small bones and thin necks, which the critic admires, that all the food upon earth would not render fat. I have seen some scores of them weighed, their weights being about 12lb a quarter; while, light as they may be on the breasts and necks, they have still more fat there than the consumer likes; though that does not arise from an over-quantity of fat, but *the want of lean.* Changing things to an extreme, as some breeders have attempted, is setting themselves in opposition to their Creator, by endeavouring to destroy his works. There must be a regular proportion of bone and sinew to the flesh, to produce useful mutton: a sheep of from 40 to 50lb a quarter, must be expected to have more bone than one of 20lb. Again, the pelt, it is said by me, should be neither thick nor thin: this idea the critic will condemn *in toto;* but time and experience have proved either extreme to be wrong, though not so objectionable as the very small bone, scrag, &c. which

have taken away every perfection of the breed. As to pelt, there must be substance sufficient to produce profitable quantities of wool; but a just medium is clearly proved to be most proper. In regard to the less quantity of food they were to eat, a trial was made with a large Irish sheep, more like a jack-ass than a sheep, and a very delicate new Leicester: at the time, I had not the smallest doubt there would be at least one third more consumed by the former than by the latter; but, though there was a small difference, it was not, by any means, equal to the reduction in weight. Some other trials, with nearly similar results, have been made, as will be shewn in this work.

As a publisher, I am compelled to record substantiated facts; otherwise I have been as much misled, and equally prejudiced in favour of the new Leicester sheep, as any person: and, in many private trials I have made in regard to offal, I have wished to prove the superiority of the new Leicester, by weighing the bones of a leg of the mutton and those of any coarse large leg I could meet with; but I never found the result what I expected and desired; the difference being constantly two or three ounces of bone in favour of the Leicester, to 4lb, or much more, of flesh in favour of the other.

SECTION IV.

Ewes.—Observations and Remarks necessary in Breeding.

THE same cautions ought to be observed respecting all hereditary disorders, as have been given for the choice of rams; and in selecting new breeders, that is to say, such as begin a flock, never to commence with bad nurses. The age to be preferred is generally shearings, which are undoubtedly the best, when they are to be met

with, of a good kind, at a farming price, which seldom happens, except when a breeder is selling off his stock: many breeders sell their under sort of sheeder hogs, but seldom the best; and I would prefer an ewe at three, or even some at four, years old, of the best in a man's flock, before the cull sheeder hogs or shearing ewes; as even from ewes of that age two crops may be taken, and then there is the first offspring year-olds, or more properly year-and-half-olds, ready for the ram, when they are draped.

A breeder who uses more than one ram, ought to hire his rams with such perfections in their wool as the ewes want; and, as all flocks of ewes vary in their fleece, less or more, it will generally be necessary, especially in a long-wooled flock, to choose rams with different kinds of wool, namely, open, or what the shepherds call close skins, as the extreme of either is improper. If this be not regarded, some of the ewes may produce fleeces shorter than they ought to be, and others, such as shepherds term *wild*, which is long wool thin set, with a small end called a *tag*, more frequently to be found on *hogs* (sheep that have not been shorn) than at any other age: after their being shorn, the next fleece will sometimes be very hairy on the thighs and about the tail, and of a dry, harsh kind, which is bad; sometimes the second fleece is thin and watery—a sort of wool that laps up into small bundles, weighing very heavy according to their size: this last wool is much disliked by the stapler, more so than the former; but the coarse, dry, hairy wool, is a sort that, let a man's ewes be what they may, should always be rejected. The latter wool, which is somewhat wild, if soft and silky, of a white, bright colour, long, and rather strong, may be proper to put to some close-skinned ewes, for although not what it ought to be in itself, it may cause an improvement in the close-skinned

ewes' fleeces, giving them length, and more yoke. Then, to make a change, or reform, in the ewes of long taggy wool, the ram should be in himself what may be termed the best of skin;—a fleece that is even on the top, of a fine bright colour, carrying equal substance from the pelt to the outward end, and feeling very full in the hand, that is, rising much and quickly when pressed or squeezed together, nearly of the same kind all over the carcase; the thighs or breech as good as the shoulders: the staple regular, and of an uniform quality and appearance.

The long-wooled ewes, in size of carcase, should be chosen according to their keep;—if on poor convertible soils, the new Leicester are the best, provided they are of a good kind; and likewise on all *convertible* soils where sheep are to be made fat for the shambles at one, one and a half, or two years old, and all such as are intended for fat lambs. Upon the best convertible soils, much the same sort of sheep, but larger: on wet, cold clays, that are continued in old grass, a larger kind of sheep, such as the old Lincolns, Gloucesters, &c.; those situations, not having fattening food on them, generally keep a sort of store sheep, which are sold to go to some other parts to fatten, being most commonly kept to three-shear, and therefore ought to be of a larger size, so as to continue growing; at the same time, although those breeding lands are not rich, this sort of land will support a heavier fleece than some better soils, of a convertible, ploughing nature; and when sheep of this kind go down into the marshes, they are found more profitable than the fine new Leicesters, not only in the county of Lincoln, but in those marshes where the London butchers take grass for the winter's keep. The butchers all allow, that what they term the old Lincolns will keep their flesh and fat, and continue increasing, for ten weeks, or even more, in the winter, longer than the

new Leicesters; for as soon as ever frosty, severe, cold weather sets in, they are obliged to kill the latter off, which the butchers ascribe to their being raised on lands better sheltered; but that is not the cause, as many of the sheep which they call the old Lincolns are raised on land as well sheltered as that where the new Leicesters are fed: the Lincolns are naturally better able to bear the bleak marshes and wet grounds; they have more bone, more wool, and that of a kind that causes all wet readily to shoot off; they are also more fleshy, though less fat; and it is well known, even in the human frame, that fat bodies suffer more from extreme cold than strong-boned, fleshy bodies. I look upon the old Lincoln and the new Leicester sheep to vary, in regard to endurance of weather, as much as the Durham cow and the Lancashire cow;—the long hair not only keeps off the cold, but it affords the same protection against heat, whilst the skins of such animals are very generally thicker. The above observations apply particularly to long-wooled sheep. As to those with short wool, there is one consideration which is material, namely, to keep an even pile (this object I have had in view in the long wool); therefore, great care should be taken to get rams that have short fine wool, closely set, without hair: neither long nor short wool, for whatever use it be intended, even for ropes, should have any hairs in it.—These directions apply to distinct breeds, without any cross.

In preparing the ewes for the rams, it is a custom with some shepherds to clip the tails of the ewes, or what those people call *opening them;* which is a very improper practice, as any wool taken from a sheep's tail towards the winter starves them. The condition of the ewes ought to be healthy and strong at the time they take the ram, but not fat: I have seen many errors in that respect: a very fat ewe is more liable to mislamb, or to be;

as the shepherds term it, *gelt* the year before. No
right for ewes to be fat at the time of lambing, as
is more danger in their yeaning: and that is not a
an ewe that is fat when she lambs will not prove so
a nurse as one that is in thriving condition.
I lived at Doncaster, I was in the habit of fat
lambs at grass: one year, I thought of much exc
whatever I had before done, by putting my ewes t
nips in the winter: they were in consequence fat
they yeaned, which caused them to be on the s
during the time the lambs were sucking; and the
not make their lambs nearly so good as those they
the former year, when I thought the ewes were r
below par.

The season for putting the ram to the long-wo
ewes is in the month of October, from about the
to the 20th; the time they go in lamb twenty-one we
but circumstances frequently alter cases, and the bre
should certainly consult his food, as it is very injudi
to have the ewes yean their lambs before he is like
have some spring of grass for them properly to sup
their offspring, it being very wrong to let a lamb re
a check in the outset, which it seldom recovers.
seems, from information, that many of the short-wo
sheep have their season more early. The South-d
ewes will take the ram as early as April; as I saw la
from those ewes on my excursion in Dorset, and als
Wilts, in the month of September, six weeks old:
Mr. Bridge says, they will not fatten their lambs
perly if they yean earlier than March. The Wilts
ewe will take the ram as early as April, and someti
fatten her lamb. But none of these kinds bring e
lambs, and fatten them, equal to the Dorset ewe:
will take the ram in the month of April, more gener
than any other, and fatten her lamb as housed la

with great care and high keep, by Christmas, and in some instances make the lamb worth six guineas: there were, last season, twenty housed lambs from Dorset ewes sold at five guineas each, all the property of one man. The breeders for stores in Dorset put the ram to their ewes about the 10th of June, and let them remain together all the summer. I have heard say, the shepherds use some device, by dogging the ewes, and running them about, to cause them to be hot; but I believe that to be untrue, as I saw nothing of the kind: and it has been reported they produce lambs twice a year, which is likewise erroneous, although asserted by authors, for I made particular enquiry as to the fact: a Dorset ewe in the county has been known to take the ram one month after yeaning, but seldom to bring a lamb from that time. It seems, therefore, there may have been a single instance of the kind; but, whenever it did happen, no profit attached to it. I have been the more particular in correcting this wrong statement, respecting the ewes yeaning twice a year, to put the reader right, as before I surveyed the county I had been made to believe it was general.

There is a peculiarity perhaps confined to the county of Dorset, which I think very judicious;—they never cut the tails of the ewe lambs at any period, nor do they shear the tails at the time they shear the carcase: this makes the ewes look unsightly, but I think it has its use; for as those ewes lamb generally in the months of December and January, and have to feed on high situations, where there is seldom any shelter, their long bushy tails keep their udders warm, and serve as a preservation to their milk.

SECTION V.

Rams.—Some Observations necessary at the Time they are put to Ewes.

BEFORE the ram is put into the pasture, the first thing is, to be careful in observing he has not got the scab, or that he has not very lately had it. I met with an instance, when I was my father's shepherd, which shews the necessity of this attention:—In the month of September, a scabbed ram broke into one of our pastures, were there were thirty-nine ewes, two of which he served: our flock being clean, these ewes were put in a place by themselves, where, the first week *in March*, they brought forth two lambs. Nothing happened to any of the ewes in the pasture, or to those two ewes; but in the last week in May I observed the two lambs to rub and scratch themselves very much, and on being examined, there was the appearance of the scab on almost every part—what the shepherds term *bletchy*, viz. little pimples, having a blue appearance, and on taking hold of the skin it feels full of lumps, which is the way the shepherds examine their flocks. The lambs were immediately killed, and their flesh was found to be nearly covered with the scab. It appeared wonderful to me, that the scabbed ram should communicate the disorder in his nature, and that the offspring should receive it, and it be so many months making its appearance;—from the time he served the ewes to the time the lambs were killed, being more than five months. Hereditary as well as contagious diseases should be equally regarded. I once made use of a ram that had an evil; and the disorder came out, not only in the offspring of that ram, but for generations afterwards; therefore, a breeder cannot be too circumspect in the choice of his rams. After endea-

vouring to keep clear of all disorders in a ram, it is likewise necessary to guard against infirmities: the shepherd must examine if he has got his worm, which is a small part at the end of the pizzle; for if it be not there, it is generally allowed he will not get lambs; although there have been some instances, very well authenticated, of a ram having lost his worm, and still getting lambs; but I never knew an instance of the kind, nor would I advise a breeder to run such a risk. If a sheep, that has not been gelt, hang no stones, he is what the shepherds term a *close sheep*, and will not procreate: if a sheep shew only one stone, he is what the shepherds call a *ridgel*, but is as safe a lamb getter as one that has no such defect, though he is sure to get some of the male lambs with the same imperfection; and as they can have but one stone taken from them with safety, they are very troublesome in the roading season, running themselves poor, and are often drowned in the marsh ditches; therefore, as they are an undesirable stock, I do not recommend these ridgel sheep: again, there are rams that have very small stones, lying close up to their bodies, so as to be scarcely distinguishable from wethers, it frequently happens that rams so formed get few lambs, and sometimes none.

All these things observed, the ram chosen, and ready to put to the ewes, it is a good way to *raddle* him on the belly, between the brisket and the pizzle, and repeat the application every day for a few days—a week will be sufficient; then, if the marked ewes come over again, the shepherd may be sure the ram will deceive them; and, as the ewes are in season again in about three weeks, there will be time to provide another ram. If the pasture be large, and the number of ewes sufficient for two rams, it is best to mark one ram with red, and the other with blue or black, by which means the shepherd will be enabled to determine which of the rams is deceiving the ewes, and

he may also distinguish the stock of each sheep. The number of ewes a ram ought to have, is the next consideration: the most proper number for a sheep one year old, or what shepherds call a shearing, is about sixty, and a two-year-old about eighty; and when a ram is of the age of four years he should have about the same number as a shearing. Some breeders have been of opinion, that aged male animals do not produce so strong and healthy offspring as when younger; but that is erroneous, as I have known a ram at four or five years old get as good stock as at any other period, though it is not reasonable to expect he will serve so many ewes: I have sometimes observed a shearing to get rather smaller offspring. Mr. Bakewell introduced the use of *teizers*, viz. rams of an inferior kind, with a piece of cloth so fixed as to prevent them from serving the ewes, but merely to find them out; having the intended ram in another pasture. I have tried this method, and have found it very troublesome; and, without very particular attention, some ewes are liable to be put off their season: it is, therefore, an unnecessary expense, and on the whole a bad proceeding.

Many breeders may say, that I have appropriated too small a number of ewes for each ram, and that a ram will serve more;—of which I am not insensible. I once hired a two-year-old ram, of the late Mr. Chaplin, at the sum of nine guineas, which at that time was thought a very great price, ten or twelve being the highest; and, the calculation of the best breeders being, to have their ewes served at 1*s.* each, I put this ram to nine score, and they all proved in lamb but five. However, I do not think it a good practice to continue, although a ram has been known to serve twenty ewes and upwards in twenty-four hours; for I have observed, that putting a ram to so large a number has caused some of the lambs

to be later in season than they would have been, which is improper, as late lambs are more tender in the winter, and consequently make smaller sheep, occasioning a loss of both carcase and wool. There is another proceeding by which I have found myself benefited:—six weeks are a very sufficient time for a ram to be with ewes; and I would recommend those breeders who make use of more than one ram, when they have been at their road a month to change the rams from one flock of ewes to another, as after that time there will be scarcely an ewe that has not been in season, and either has or ought to have been served; but I have observed a ram, on some account, to dislike a particular ewe, and beat her off: when that is the case, the ewe, if she remain with the same ram, must miss being served: independent of this, it is well known to happen with mares, after having been fairly covered by a stallion, to keep receiving him, and when taken to another stallion have stood their stinting the first time; cows, the same; and it doubtless may be the case also with ewes. I have put another ram to the flock when the first ram has been a month or five weeks, and frequently a ram-lamb; but I have found that not advisable, as the old ram will beat the lamb off.

It has been a practice with the ram breeders, to make their sheep uncommonly fat, by every means possible, by way of show, forcing them much beyond nature; and when they let them, to put them to inferior keeping, to cause them to shrink: this must be very improper, for when an animal is on the decline, he cannot be healthy; and, as appears from some circumstances recorded in this work, many disorders are communicated by the ram to his offspring. I have observed lambs got by the new Leicester rams that had been treated as above, to be very weak, small, and feeble at the time of yeaning, and some of them much deformed, with distorted necks. There-

fore, I think it a very bad practice to force rams by excessively high keep; which may have been one cause of the new Leicester sheep becoming so tender, as well as of the mistakes that have been made in their form by the breeders. It appears clearly to me, were those sheep kept in a store-like way, or even as fat sheep are, they would get more healthy stock, better able to bear the extremes of weather, and hard keep. But it is well known, that critics on the breed of the new Leicester sheep, instead of keeping four sheep on an acre, have scarcely kept one sheep on four acres; though they hold out in defiance, that their sheep will fatten where all other breeds would starve!—but the manner in which they keep their sheep is no proof of the assertion. Those sheep have *many* indulgences:—such as putting on jackets, a practice which cannot possibly be adopted in a general store stock; building houses for shade, trimming them in every part, even shaving their legs with a razor, &c.: and, as it is allowed that like is sure to get like, the offspring must be expected to want jackets, or to suffer much without them; indeed, I know a new Leicester breeder who sends his sheep in jackets to Smithfield, out of Rutlandshire, and when they come there they weigh from 12 to 16 or 18lb a quarter. But putting on the jacket has another effect, besides preserving the skin;—it causes the wool to lie flat, all keeping the same level position; for if the sheep have any hollows, or defective places, in his back, or in any of his upper parts, the jacket suffers the wool in those hollows to stand at full length, while the pressure on the high parts keeps them down; consequently, sheep so treated shew more like a well-made up horse than a sheep; and it has long been a general observation, that there is no animal so deceitful as a horse-dealer's horse. And what has been effected by all this trick, of shewing one sheep at a time, to prevent breeders

from making comparisons? and the new mode of handling, by touching the sheep along the back-bone, as if he were made of egg-shells, while, should the breeders give their opinion, it is deemed an ungranted liberty?—which, by the by, is very wrong, for doubtless the farmer who is hiring rams, knows what he wants, and which are the most profitable sheep, better than the ram breeder; for the farmer who breeds stock for store and fattening, obtains his living by fair trade, whereas the ram breeder, *lately*, has got his by deception: add to which, the ram breeder is a sort of provider to the farmer, and keeps, as it were, a shop of goods for sale, and it is his business to keep such as his customers may prefer. I have been with the late Mr. Bourne, of Dalby, in the county of Lincoln—(whose father, I believe, was the first man who ever observed particular days for the public show of rams)—at the time of his shows, and at other times when breeders from different counties came to look over his stock: he always sent the shepherd with those breeders, to shew them the rams in the various pastures; and at their return, Mr. Bourne would attend them, and ask if he could suit them with rams they liked; if they replied No, he would request them to tell him what they wanted, and he would endeavour to obtain it for them. Now, there was candour in that behaviour, coupled with good sense: and he has observed to me, "You know, if I were a woollen-draper, and kept only red cloth, although it might be of the best fabric, every man would not choose to wear a red coat." But the Leicestershire business has been carried on with such a high hand, as if no other set of men knew any thing but the breeders of that county: and how does it terminate? — like all other deceptions of the kind, when found out, in incurring the censure of almost all butchers and unprejudiced breeders.

I was in company with a most respectable London butcher, who cuts much mutton, lamb, beef, pork, &c. when he asked me, if I knew some of the Leicestershire critics; among the rest he mentioned Mr. Walton, who I consider one of the best judges, but, like the rest, too formal: he said, he was chosen umpire in judging of some Kent sheep, bred by Mr. Wall, and some new Leicesters, when he gave his decision in favour of the Kent sheep; and Mr. Walton being one of the judges (this happened at Ashford wool-fair), he took the liberty of making remarks on his method of handling sheep; he told Mr. W. that if he were to handle sheep in the manner Mr. W. did, he might as well not touch them, for by the Leicestershire critic's mode of handling he can be no judge as to the perfections which a butcher's sheep ought to possess. But, to state the whole of the matter fairly, if the business of a ram merchant be necessary, which I am willing to believe, his duty is to provide such sheep as the breeder or grazier (who is his customer, and the only man he has to regard), finds pay him the most money: the grazier's customer is the butcher; him, therefore, he should endeavour to satisfy: the consumer being the last customer, the butcher has him to please; for the consumer must, and will, have what he likes best:—thus it appears, although the ram merchant is the first man in the concern, he is the farthest from knowing what is wanted. The merchant's deficiency in information is clearly shewn by the conduct of the new Leicester ram breeders; as they have, on the carcase, bred a sheep merely to please themselves; saying "No men are judges but us, and we will breed our sheep of such a form as *we* like:" and this system they have, from time to time, persevered in, until many of the finest of their sheep produce little but fat and bone, and some of them not much of that; giving the

butchers reason to say, they have pretended to breed sheep without offal, and at length produce nothing else. The London consumers do not eat bones, nor do they like meat composed almost entirely of fat; it therefore becomes the interest, as well as the duty, of the ram merchant to produce sheep with much flesh, and that of a fine grain and juicy nature, with only a due proportion of fat.

The reader who has perused the work I first published, may, with much truth, say, I have changed my opinion since that time. I am never ashamed to acknowledge my error; and the surest way to prove right from wrong is to get wrong first, as every person will allow that experience is the best guide; while a man who has tried both sides may speak more confidently than when he has always continued in one track. But the Leicestershire ram business has changed as much, if not more, than my opinion. When I first visited Dishley, Mr. Walton was an assistant to Mr. Bakewell, and John Breedin his shepherd; they shewed me all the stock in the pastures, which were then kept in a store-like manner, and the breeding stock on worse pastures than my own, though much fatter: the rams were kept, as near as I could judge, two or more on an acre, with some cattle among them. The breeding ewes were put into a fold for me to examine, and I was at liberty to take any one I should pitch upon, handling them as I pleased; every person about the place behaving with as much civility as a London shop-keeper, and Mr. Bakewell open and candid, capable of giving, and ready to afford, every information. Two years before I left England I went to look at the Dishley stock, and found the system entirely changed—all but the conduct of John Breedin, who shewed us a cow for a good one, which would bear no comparison with what I had seen

before: there was a party with me, who had heard me highly extol the Dishley stock, and my feelings were much hurt at not finding them better. I stopped behind the company, and asked John Breedin if that was their best cow: he said it was, but not nearly so good as I had before seen there; which was candid and correct, as the first and second time I viewed the stock, I saw some yellow cows, such as I have never seen since, so far as my memory will carry me. Their prime sheep, at this time, were not so fat, or so large, as the common breeding ewes upon beaten pastures, although I always considered them with the smallest; and the wool of many of their stock was bad, and little of it: but they had many perfections to balance against these defects. I remember some of the rams were remarkably wide; the loin nearly two spans over (which must have been about eighteen inches), which I thought, and now know to be, a very high perfection: I saw another sheep, called Rumps, of which the part that the Lincolnshire graziers call the cushion hung over the tail like a swarm of bees: all those properties must add much to the weight of the hind quarters; while the length of the hind quarter was much greater, the leg better let down to the hock—in fact, they scarcely lost an ounce of weight in any part, according to their size. When I returned from abroad, I went through the county again, and found the sheep greatly altered: I had the audacity to tell the ram merchants that their sheep were much changed for the worse—become short in the rump, or what the Lincolnshire grazier calls wiped away, that is, being thin and short from the huck bone to the tail, and not nearly so fat. I told them, they either bred or fed worse than they used to do, as their sheep were nothing like so fat as they were a few years before;—and I was a better judge of that imperfection than they themselves were:

indeed, as the sheep had been regularly declining, they had not perceived it;—for when I first went to Dishley the breeding ewes were much fatter than their prime sheep were then. I was astonished at their great aptitude to fatten, knowing that it greatly hinders the thrift of sheep to get them in a fold once a week, and handle them; and I had reason to believe that Mr. Bakewell's might be got up twice a day.

Notwithstanding I have changed my opinion in regard to the breed of sheep, my first idea is substantiated by the London butchers to this day—that one cross of Mr. Bakewell's sheep was of service to most breeds; what they term one fifth, but no farther: it therefore appears that Mr. Bakewell had himself sheep enough of that fine sort to serve all the useful purposes wanted at that time in the kingdom; and that they have become too general, by getting, in all probability, into the hands of breeders who are not judges. Were Mr. Bakewell living at this time, for the same reason he saw what was then required, he might be expected to provide what is now wanted; and although he bears the blame of spoiling almost all the breeds in the kingdom, it may not be his fault. It was a saying of his, that 'he had a sheep in a coal-pit;' meaning that he kept his thoughts to himself, and was anxious to obtain a stock that would, at all times, pay the most for what they consumed; therefore it may be fair to conclude, that, by this time, he might have produced sheep of a very different make—large, full of useful flesh, and well covered with wool.

I have mentioned trimming, which will shew that Mr. Bakewell also changed his opinion; for he, the first time I was at Dishley, very much reprobated the practice, exclaiming, that he bred his animals so perfect as not to have a wrong hair upon them: he spoke of the ram breeders in the county of Lincoln doing it; and par-

ticularly of Mr. Chaplin shearing his sheep abc
neck, which the Lincolnshire shepherds call the
some time before he sheared the other parts, and
the wool in the hollow places longer; and then
time before they were shewn, topping the wool w
shears, to make them appear level, cutting the h
the outside of the wool, clipping their faces, leg
which was all true. Mr. Bourne used to trim
sharp knife, in a much neater manner, being a
deception than with the shears. Mr. Bakewell sc
extolled himself at that time, as to say, he shew
best stallion as nature had made him; that he nev
been in a stable, never had a bridle in his *mouth*,
on his foot, or a comb, brush, or even a *whisp*,
upon him. I thought all this a great recommendati
favour of Mr. Bakewell's character, as I look upon
ming of sheep to be a most shameful and abom
practice, and ought to be deprecated by all hire
rams; as the wool that grows on the legs of sheep
about their faces, is one of the most distingui
marks of a bad fattening and bad breeding sheep o
outward appearance that a sheep has about him.
Mr. Bakewell was afterwards, by some means, de
away from his first principle; perhaps from his
not being so perfect:—indeed, that must have beer
case, or why trim? *Now*, there are no such trim
upon earth as the new Leicestershire ram breeders;
trim, not only their sheep, but their bulls likewise:
the practice is become so common that every kin
sheep brought to the shows are all trimmed: it has
extended to Ireland, where I saw a boar pig, carrie
a show, with all the hair shorn off him; and, as P
is famous for making of bulls, he made a bull of
boar! The hair being long and thinly set, is one of
greatest perfections that a pig can possess; and, let

condition be what it may, he is known to be of a good kind by the sort of hair which this boar had, for I let the boar to the man who trimmed him: but further to substantiate his perfection, he was half-brother to the pig that gained nearly two pounds and a half a day for one hundred and four days (hereafter mentioned). The practice of trimming is so vile, that in those public shows appropriated for prize animals, no animal that is known, or can be discovered, to have had a single hair taken from him that nature gave, ought to be allowed a prize.

SECTION VI.

Bastard Lambs.

WHEN an ewe loses her own lamb, and has another put to her, it is termed by shepherds a bastard lamb. The method I have practised, with success, is, to take the skin off the ewe's own lamb and put on the adopted lamb. In skinning the ewe's lamb, with a knife open the throat, not farther than from the under jaw to the point of the breast, cut the skin close to the ears, and draw it off whole, leaving the tail on; then put the live lamb into the skin, and sew the part up under the throat: skin even the legs of the dead lamb, as low as the knee and the cameril, so as that the live lamb's legs will slip in. Rub the part of the crown that is exposed with the slime or cleaning, if the lamb die in the state of lambing; if older, with the guts or pluck. In putting it to the ewe, the most certain method is, to put it to her in the dark, in some small confined place, just big enough to hold the ewe and lamb, that the ewe may have less opportunity of examining it, as the ewes are apt to examine under the throat and belly: and, as lambs suck under the tail, the live lamb's tail ought to

be within the skin, or what shepherds term the *jacket*. Take care that the lamb put to the ewe be hungry, and be sure she suckle it immediately. This is very material to be observed, as by the lamb sucking, it produces an attachment to the step-mother; and as the ewe will find easement from the lamb's sucking, both will be pleased. In the morning it is advisable to let the ewe and lamb be in a detached place by themselves; for if they be put in the flock, it sometimes happens the lamb will stray from the ewe, and be in search of its own mother, as it will generally discover the difference: therefore it is proper to take it from its mother early in the day, that it may be hungry. It is commonly necessary to let the skin remain on two or three days, or sometimes *longer*; but the less time the better, as the lamb, by having the skin on, is heated, and receives some small injury. I have met with instances in which I have had the skin to cut off, piece by piece. The ewe and lamb have more discernment than some people would imagine; they not only know by the smell, but by the look, actions, &c. I have deceived an ewe when her lamb has been taken away dead, by not letting her see it, and laying another lamb, just dropped, before her, which she has taken: but that will not always succeed, for nature so far informs the ewe, that she knows by the taste of the slime, smell, &c. I have also deceived an ewe by taking her lamb, and, preventing her seeing me, when the lamb has been dead, after skinning it, putting the skin on another lamb, and suckling it as she lay; I then tied the feet of the lamb, with the skin on, and laid it on the very same spot where the dead lamb lay, and it has appeared as if the lamb were coming to life again. But the first is the safest and best method, and is well worth attention; for if an ewe do not take the lamb put to her readily, great injury is occasioned to both the ewe and

lamb by the practice of hampering the ewe by tying her legs; or some persons use a long rope, with which they tie the lamb to the ewe, which is a very bad way, as it puts both ewe and lamb out of temper.

SECTION VII.

Castrating Lambs.

THE best time to castrate lambs is when they are very young, not more than two or three days old at the most. I have several times cut a lamb the very day it was lambed, when strong and healthy, and I never knew one do ill from the operation; I therefore think the younger the animal is the better.

In performing this operation, some persons slit the cod; but the best method is, to cut off the end of it; for when a lamb becomes ill from being gelt, it is occasioned by the blood festering, and the cutting off the end of the cod gives vent to the matter. I have sometimes *stuffed* the testicles, by slitting the first skin, to let the stone slip out, and then removing it by cutting off a small part of the skin immediately inclosing the stone, thinking the string of the testicle did not extend so far into the vital parts: but I believe this method to be injudicious, as it wounds the part of the skin left in, which is more liable to canker; while the larger the orifice is the better, for the discharge of the blood. The state of the atmosphere should be particularly observed, as dry weather is always improper, especially if it be hot; for as the lamb lies down, the blood will be very liable to stop, and fester in the parts. I am of opinion a rainy day, or at least damp weather, is suited to the operation; but it appears to me, that during snow is still better. When I lived with my father, there happened, as we thought, a very unfavourable time for the castrating of lambs, it being cold and

wet; one morning proving much finer, and as it was our custom to cut once a week at farthest, which is a very good rule, I embraced the opportunity, there being then more lambs than usual to cut, and castrated every lamb down to one day old: in the day it turned cold, with some snow, but during the night there was a very heavy fall, so that many of the lambs which had been cut the day before were drifted up with the snow, among which we had them to seek, and even for several of the old sheep. I was much alarmed, thinking they must all die; but, on the contrary, they did not move the least stiff, and bled so freely, that we were obliged to tie a string round every lamb's tail that had been cut, or many of them would probably have bled to death. Not knowing an instance of a lamb bleeding to death by the tail being cut, I suffered them to bleed until some were very weak, and one not able to stand: by this I learned that blood runs much thinner in cold weather than in hot; and that cold wet weather is more favourable for castrating lambs than hot dry weather, as it is the festering of the blood which causes the parts to gangrene; add to which, in such weather they do not lie so much, but keep moving about, to suck, all tending to promote their well-doing. Since that time, therefore, I have preferred a rainy day; nor does cold prove at all against the lamb's getting over the operation with both safety and ease, as the milk from the ewe keeps it warm: hence I would recommend the shepherd to make choice of a rainy day, and even if cold, I doubt whether it is not beneficial.

SECTION VIII.

Twitching Rams.

THIS operation is performed by tying a piece of strong cord round the cod, between it and the body:

it is particularly necessary to observe the part; for if too near the body, the string may, by taking hold of the skin of the belly and some fat, cause gangrene; and if too low down, twitch the stones, which is very hurtful, as they are extremely sensible to pain, and their being bruised causes the animal much suffering and danger: but when the cod is tied in the exact part, just to deaden the string by which the stones hang, the sheep scarcely experiences any pain, nor is there the least danger of loss. The cord or string is best made of thread, well rubbed with shoe-maker's wax, of a substance sufficiently strong to bear the pull of two stout men; for it ought to be drawn so tight, that, were the cod and stones cut off, there should not be one drop of blood come from the parts above. It is a custom with some shepherds, to cut the cod and stones off about one inch or an inch and a half below the cord; but I do not approve of that mode, as I have seen some instances, when the parts were not entirely deadened by the twitching, in which the sheep has gangrened, and died in two or three days. The knot for the purpose is of a peculiar description, a drawing of which will be given in this work; it will twitch tighter than any other, and not give back. When the part is properly corded, and the testicles have lost all communication with the vital parts, there is no danger in cutting the cod end off, or even the stones; but should the operation not be effectually performed, removing them is attended with considerable hazard: I therefore leave it on; though I frequently cut off a piece of the cod end, to let out the stones, as they generally drop before the skin of the cod.

Note.—It is necessary to rub both the cord and the part twitched with a little grease, and to apply some spirits of turpentine about the ligature.

putting the young smallest lambs to weed the turnip crop, when sown and managed as directed in the new "EXPERIENCED FARMER," vol. I, part ii, sec. 22, page 429: this mode pushes the lambs, and prepares them for learning to eat turnips in the winter. Before I adopted this practice, my weakest young lambs have suffered much on being first put to turnips; and if lambs are pinched in the latter end of summer, if they take to eating turnips, they are often affected with the green skit, which was the case with Mr. Whitworth's;—a remark I have made in speaking of the cure of the green skit. Weaning lambs early, and taking care to keep them, as directed, on poor thin soils, I have learned is highly conducive to the prosperity of the flock.

Putting lambs on the turnip crop is attended with much profit, independent of keep, which is considerable. When I lived at Slane, I kept two hundred lambs thus, from the middle of July to the end of October, by changing them once in the time; for when they have been about six weeks on the turnips, some of them will eat the tops, and they soon would begin with the bottoms: but even that is attended with profit, as I got four hundred lambs, uncommonly well kept, on twenty-nine English acres of turnips; and they learnt to eat turnips at the same time, keeping the land freer from weeds than any number of hand-weeders could have done; for, if lambs are put on early enough, they will take every weed as it springs up: but there must be rape sown among the turnips, or there would not be food for a sufficient number of lambs to keep the weeds down. Sowing rape with the turnip crop is also very advantageous, by preventing the fly; and when the turnips are hoed, if there be a single plant of rape left to every turnip, as nearly as the hoer can do so, the rape, by growing quicker and higher than the turnip plant,

will shade it for a time during the first stage, and promote its growth; but the rape would injure the turnips if it had not a check about that time, by the leaf of it overhanging, and consequently smothering them, thereby causing the bulb to be small; whilst, by there being rape plants among the turnips in every part, the lambs are induced to traverse them more regularly than they would otherwise, taking every young weed as it springs, so that there will not be a single weed to be seen, as there are very few weeds that young sheep, in particular, will not eat in preference to any other food: but the farmer must observe, sheep like many kinds of weeds only in their early stage, for they will only eat the leaves of weeds when they are grown to blossom, seed, &c. constantly refusing the stalks.

By the mode of proceeding here prescribed, there is a real necessity to take off the lambs in the middle of June, as the old sheep cannot be admitted amongst the turnips; and they are better taken from the ewes one week, at least, before they are put on the turnip crop, as they would injure a portion of the turnips, by beating them down with being restless for their mothers: and I have found it advisable to keep the ewes in a fold-yard for a day and night after the lambs are taken from them, as they are impatient when the lambs are first separated, and frequently break out of their pastures, lying during the first day in some spot perhaps against the gate, and dropping their dung in a part where it is of no service—for in the fold-yard it adds to the dung-hill. In the morning, before being turned out, I had them milked, and a good cheese made of the milk: before I adopted this practice, the milk often festered, and some of them had the gargle, and lost part of the udder, one pap, or even both. In two days after, I had the ewes got up again, and a part of the milk drawn from those that

appeared to have too much: this method has a great tendency to make the ewes fatten quicker; for when their udders are full of milk, and it is not drawn, it causes them great pain; while, by the milk festering, it will turn to the gargle, and at times destroy the constitution of a good ewe, as the best nurses are the most frequently full of milk: some few of the ewes may want milking a third, or even a fourth time.

To shew more clearly the profit arising from the practice of weeding the turnips with lambs, I will draw an account from my own experience:—two hundred lambs at 2½*d.* a week each, for seventeen weeks, is 35*l.* 7*s.* 6*d.*; which, on twenty-nine acres of turnips, is 24*s.* 6*d.* an acre nearly: by keeping the lambs in this way, I have had a second crop of clover to mow, and have obtained another clover stack;—all adding to the dung-hill: and if wheat be afterwards sown on the clover stubble, it is not so liable to the mildew, which the dung of sheep is most likely to produce. There is another thing much worth notice;—I never observed the dung of lambs to produce mildew on turnips: the reason is obvious, for the lambs, passing and repassing, by moving the tops, give air to the turnips, which causes the bulb to become larger than it otherwise would. It is well known how much faster turnips grow after hoeing, and what a wonderful effect the wind has upon them by loosening the root; and the earth around being broken, the bulb has liberty to expand. This effect is in a great degree produced by the feeding of small lambs, which passing almost every turnip, when a rape plant stands by the side of it, gives it a shake, acting upon it somewhat similar to the wind in the early stage: while, although the lambs will prevent the rape from spreading, and overhanging the turnips, and cause the top of the turnip to be the master-branch, yet the rape-stalk still remains

alive, and during the winter furnishes some feed, and that of a good fattening quality; and I have observed the sheep in the winter, when put on a fresh fold, to eat every stalk of the rape in preference to the turnips. Therefore, from my own experience, I very highly recommend the practice of sowing rape in the turnip crop, and weeding the turnips with lambs after hoeing.

SECTION X.

Crosses.

I SHALL first state my own experience on the kinds of sheep which I brought up under the direction of my father, who bred long-wooled sheep of a *very good kind*, the size of carcase being what he termed large *in* a small compass. As a proof that he accomplished his purpose, I remember an instance of a shearing wether becoming ill, and there happening to be a butcher at our house, he killed and dressed it, when it was found to weigh 29lb a quarter, or 116 the carcase: the season of the year was the latter end of February; the food, grass only; the soil, poor clay land, then let at about 9s. an acre, now worth about 18s.: this was more than fifty years ago. After I left school, at the age of fourteen, I was made my father's shepherd; about which time, or two years after the shearing above mentioned was killed, an ewe that had before yeaned three lambs falling ill at yeaning, I killed and dressed her, and took out of her the kidney fat and loose fat, weighing together 14½lb. At this time, or shortly afterwards, when the militia were first raised, a conversation arose in company respecting the best sheep, and Mr. Lister, of Burwell, who was a captain in the militia, offered a bet of one hundred guineas, that my father should produce a hundred ewes against all England: this bet was not

taken. The wool of these sheep was of the very best long kind, averaging about 9lb a fleece, breeding and feeding stock put together.

I have stated the foregoing circumstances with two views;—first, as shewing that I was brought up having the care and inspection of a good flock; and, secondly, that breeds have not been improved by the late crosses in long-wooled sheep. To substantiate my own ideas on this subject, I have taken the opinion of the carcase and cutting butchers in the different markets in London, and they all agree, from the experience of a lapse of time bearing an equally remote date with the above, that sheep of a later period have not consumed less food. Many of these butchers are in the habit of buying sheep to graze in the winter; and they have not kept a greater number on an acre, since the new Leicesters have been so generally introduced, than they did before; while the mixed breeds of new Leicester sheep proving tenderer, they have been obliged to kill them ten or twelve weeks sooner than those they termed the old Lincolns: add to which, by the new Leicesters coming lighter to the scale, they have brought less mutton into the market than the old sort would have done, occasioning the mutton to be dearer to the consumer than it otherwise would have been; therefore, from the opinion of these butchers, the consumer has been injured. As the cross has been rendered general, the breeder and the grazier's profits continue nearly the same, which is but reasonable; it is therefore the consumer, in almost every instance, that bears the burthen, as in a short crop of wheat he pays the dearer for his bread, &c.

To return to crosses taken under my own inspection. —My father's breed was chiefly from Mr. Bourne, of Dalby; and about one sixth or eighth from Mr. Stow, of Bilsby, whose breed of sheep was the original of the

new Leicester: this method of breeding corroborates the idea of the London butchers, that what they term one fifth of the new Leicester is of service, but no further. My father's plan was, to take a sheep of the breed of Mr. Wall's, of Boothby, about one in sixteen; —his sheep were larger than Mr. Bourne's, and Mr. Bourne's larger than Mr. Stow's. My father had an utter objection to breeding in-and-in; so much so, that although he raised about the number of rams every year he had occasion for, he never used one of his own, but sold them shearings, for about the same sum for which he hired his rams; as his opinion was, that sheep from crosses were less liable to hereditary disorders and all infirmities, and naturally more inclined to *fatten*. The first cross I ever knew my father to take that *materially* injured his flock, was from a cross of the old Leicester belonging to Mr. Bourne; the offspring of which were very large, with much bone, large feet and heads. From this sheep we lost upwards of twenty ewes at yeaning: our usual loss in the flock before was about two. At that time I had not the least idea of the cause, nor had my father: large sheep, with extremely long wool, were become fashionable, and great loss was sustained by many breeders. The cause is obvious, as the very same breed of ewes had, on the same keep, been known to do well, and with little loss in yeaning, before that time. It is very natural to suppose that the lambs from those large, coarse sheep, would retain the like features; consequently the yeaning was attended with considerable difficulty, occasioning a soreness within, that caused the ewe to continue her pains after the lamb was drawn from her, of which she often died.— No other material circumstance happened in my father's flock after this cross.

When I began to breed for myself, I lived at Clay-

thorpe, breeding chiefly from my father's store; and I had more than usual success in the breed of sheep, as to increase and health. After I removed to Asgarby, I had what is termed by breeders uncommonly bad luck, losing great numbers of my flock; the cause of which I did not then know, though now perfectly evident to me:— Claythorpe was rich breeding land, and Asgarby poor grass land; the chief of their winter's support at the latter place being turnips, and seeds in summer; while their keep was very irregular, sometimes a great flush, at others rather scanty. The crosses I took on that farm were partly from Mr. Bourne, and partly from Mr. Codd, of Ranby, after he got into the new Leicester breed; the results being pretty nearly as follows. As I then sold shearing wethers, I generally kept the greater part in the Lincolnshire marshes, putting them into different pastures for the winter, the several sorts of best sheep being put to the best land, and sent to market first: about three out of four of the old Lincolns were in the first draw, and one of the cross of the new Leicester. I then became acquainted with Mr. Chaplin, of whom I one season hired nearly the best two-shear ram he had, weighing, living weight, before being put to ewes, 16 stone, 14 lb to the stone. I had a ram immediately out of the county of Durham, that weighed 17 stone after his long journey: I suppose he weighed at least 19 stone before he set off from that county. I had also, the same season, a shearing ram from Mr. Codd, which weighed 12 stone. The offspring from these rams were, in value, nearly in the proportion as their living weights; the greatest aptitude to fatten, and the hardiest, being from the cross of the Durham. In this year I likewise used two other sheep, of the breed of Mr. Bourne; and the stock was altogether the best I ever bred: the lambs were all good, but the cross of the Durham much surpassed the others, parti-

cularly in ewes; though, on that thin land, the ewes were fatter, two on an acre, on the first year's seeds, rye-grass, trefoil, and white clover, than they should have been. The next season I took a sheep of Mr. Ombler, weighing 20 st. 3 lb after coming out of Yorkshire, and brought to Lincoln for show, where he was weighed: this sheep got rather the best stock I had that year. The season following I had two sheep of Mr. Bakewell; one, from appearance, of the Durham kind, weighing 23 stone, after travelling from Dishley to Asgarby; the other of Mr. Bakewell's breed, weighing 14 stone: these sheep were both two years old; and the sheep of Mr. Bakewell's own kind was a very complete animal, both in wool and carcase, and his offspring much more perfect than those from the large one: although the latter in himself was equally fat with the former, there was no comparison in the offspring; but the produce of either of them was not nearly so good, or so fattening, taking the season throughout, as the cross from the real Durham. I then removed to Doncaster, where I at first had but one small piece of land, containing nine acres, on which I kept twenty ewes, with an intention of rearing and making fat lambs: the ewes I had purchased were old Lincolns, the ram half Durham half old Lincoln. With this breed, I could neither make the lambs nor the ewes fat. Finding this would not answer, I the next season bought twenty Pennestone ewes, and put to them a new Leicester ram, from Mr. Sale's, of Wintbridge. This year the lambs fattened very well, weighing from 9 to 10lb, and a rare one 12lb, a quarter, which was the weight of the ewes on the average: the ewes did not fatten regularly. But small profit arising from this breed, I had only ten Northumberland ewes (which are noticed in the section on the *rot)* the next season. Having increased my farm, I bought thirty ewes from Northum-

berland, sent by Mr. George Culley, and put to them a ram of the new Leicester breed: the ewes were not the thorough breed of Northumberland, being about one fifth new Leicester: these answered very well, both in ewes and lambs; they got very fat, and proved very profitable, the lambs weighing about 14lb a quarter, or 56lb the carcase, sold to go to Sheffield, and much admired both for their beautiful appearance and flavour in eating. I then increased my number to fifty. This cross I found very advantageous; the ewes, on an average, in lamb to a new Leicester, paying, with the lambs, about one third of which were double couples, about 2*l.* 18*s.* or 58*l.* a score: two ewes were kept during the winter on one acre, without any further support; and in the summer they and their offspring, half a beast, and one fourth of a horse, on the same quantity of land. From this breed and management I derived the greatest fair profit, all coming to the shambles, I ever experienced, which I therefore continued: and in one year, during the time I resided at Doncaster, I had a lamb from a real Northumberland ewe which Mr. Culley sent me that season—these ewes being much larger and coarser, with coarser wool, but better nurses—the carcase of which, at five months old, weighed 80lb, or 20lb a quarter, worth, at 9*d.* a pound, the carcase only, 3*l.*, being of the size of many wether sheep of the long-wool kind. In the same year, and on the pasture, I had an ewe that produced two sheeder lambs, weighing 17lb a quarter each, which, at 9*d.* a lb, would have given 5*l.* 2*s.* the carcases: the skins were sold, the whole lot together, at 3*s.* 6*d.* each; and valuing the heads and plucks at 2*s.* the lambs made 5*l.* 11*s.*; while the ewe at that time paid, in wool and carcase, 25*s.* —probably as much clear profit as at this period, the price buying in and selling out bearing perhaps equal

proportions: but that ewe alone would have paid, for thirteen months' keep, 6*l.* 16*s.* I am of opinion, that there is no cross equal, as to real profit, in fat lambs, to that from a new Leicester ram with any large-sized ewe that is a good nurse. I have now gone through my own practice in crosses, except during the two years I lived in Ireland, where the cross I took in fat lamb agreed perfectly with what I have above stated:—I sold one hundred fat lambs, all at one draw, for more by about 5*s.* a head than the average price of the best fat lambs of the Irish kind; and a bet was offered by a jobber, of 100 guineas, that there never before was such a price given for one hundred lambs to any breeder in that country.

The cross of a sheep bred by Mr. Hutchinson, in Hail-fen; got by a ram of Mr. Robinson's, of Kirkby, near Sleaford; and fed by Mr. Trimnel, of Bicker.—He never ate any corn, or oil cake, &c. but fed wholly on grass and herbage. Being turned, with many other sheep, into a field of clover, this sheep was observed first to search for the sow-thistles, and would eat no other food whilst any of them could be found in the part of the field that was hurdled off successively, a little at a time. None of the other sheep that fed with him shewed any partiality to the sow-thistle. A small hut was erected in the field for him to repose under in hot weather; and when the part hurdled off became bare of food, his attendants, guided by his propensity for sow-thistles, gathered a quantity for him, of which they gave him, at stated hours, three times a day, from 2 to 5lb a meal.

Standing on his feet, he measured only two feet six inches high: his weight was ascertained once a month, and he weighed alive 26 stone, 14lb to the stone. He gained only one pound the last month. As it was thence concluded that he had got to the top, was quite ripe, and

might possibly lose weight, the next month he was killed, on the 13th of October, 1791, being then a four-shear, or four years and a half old sheep.

The skin, hung up by the nose, measured 10 feet 2 inches from the point of the nose to the tip of the tail, and was sold for 7*s.* 6*d.* in the course of business. The carcase measured 5 feet from the nose to the tail; the rump, or cushion, 8½ inches in depth; plate, or fore flank, the same thickness; breast end 7 inches; 1 yard 5 inches round the collar; and weighed 67lb a quarter, or 268lb the carcase, which is, London weight, 33 st. 4lb avoirdupois. The legs were estimated at 40lb weight each; but if cut venison fashion, would have weighed 50lb; for which, the property of Mr. Lumby, 2*s.* a pound were offered; so that the two legs only would have brought 10*l.*

Mr. Hutchinson, the breeder, told me, he supposed this sheep to come from a Scotch ewe, he having a small number of that kind of sheep in his breeding flock the season it was bred; and he had some other wether sheep in that year's produce which, at three-shear, weighed 50lb and upwards; but never, either before or since, had any sheep of such weights.—The Scotch ewes are large, with black faces and legs, coarse hairy wool, and are a very plain, ill-made animal.

Mr. Boys, carcase salesman, of Newgate market, quotes a circumstance somewhat similar, in a Welsh ewe, put to a Lincolnshire long-wooled ram of a large kind, which produced a wether that, at the age of three years, weighed 32lb a quarter: the Welsh ewe not being supposed to weigh more than 12, consequently the increase by the cross on the carcase was 80lb, which is the weight of a good-sized sheep. But the produce of the Scotch ewe, if she would have weighed 20lb the quarter, or 80lb the carcase, was considerably more: the increase by the

cross being 188lb on the carcase—a much greater weight than most of the heaviest sheep in the kingdom, being 47lb a quarter.

SECTION XI.

Names of Sheep at different Ages.

MALES.—The names by which male sheep are distinguished are as follow, viz. the tup or ram, while with the ewe, is called a *tup* or *ram lamb*, as long as it sucks; when weaned, or taken from the ewe, till the time it is shorn, it is termed a *hog*, or by some persons a *lamb hog*; then a *shearing*, or *shearing ram* (at which time it is one year and a half old); after that period, when clipped or shorn, it is called a *two-shear*, *three-shear*, &c. always taking its name from its age or time of shearing. When castrated, it is called a *wether lamb* while sucking; then a *wether hog*, till shorn, when it takes the name of *shearing*, and afterwards *two-shear wether*, *three-shear wether*, &c. according with the time of shearing.

FEMALES.—The female sheep is called an *ewe*. While sucking it is termed an *ewe lamb*, or a *gimmer lamb*; and after being weaned, or taken from the mother, it is called, in some parts, *sheeder*, *ewe*, or *gimmer hog*, till clipped or shorn the first time, when it is termed a *shearing ewe*, or *gimmer*, for one year, until it is shorn a second time, when it obtains the name of *ewe*, which it retains as long as it lives; and every time it is shorn, a year is added to its age, giving the appellation of *two-shear*, *three-shear*, &c. *ewe*, according with the time it is clipped or shorn. The age of sheep is not reckoned from the time they are lambs, but from that of shearing; for although a sheep is generally fifteen or sixteen months old when first shorn, it is not called a *shearing* till that

time, and then understood to be one year old. What are termed *gimmers* in this work, are in some parts called *theaves;* and when twice shorn, *double-theaves.* In some parts, male lambs are called *heeders,* and the females *sheeders;* in others, hogs are called *tegs,* and ewes *two-year-old twinters, three-year-old twinters,* &c.

SECTION XII.

Rules to know the Age of Sheep.

SHEEP renew their teeth, the first time, at from fourteen to sixteen months old; and afterwards yearly, about the same period, until they are turned three years, or *three-shear,* to speak technically, when they are full-mouthed: but though they have eight teeth in the under jaw, they only renew the three on each side. Some persons are of opinion they renew the two teeth in the middle, which is erroneous; for if hogs at turnips break or pull out the two middle teeth, they never come properly again.

SECTION XIII.

Some conclusive Information, derived from the different Surveys I have made for the Honourable Board of Agriculture, and the Opinion of the London Butchers.

IN taking my surveys of Huntingdon and Rutland, both being breeding and feeding counties, I found the sheep to have diminished in value, both in regard to wool and carcase, nearly one fourth; and, from the information received, it appears that greater numbers are not now kept, in scarcely any instance, but in some parts even fewer; while from a correct statement given in Mr.

Godfrey's Todd-bill, the sheep of the county of Rutland, about ten years ago, averaged 9lb a fleece, and now only 6lb, being a decrease of about one third. In the county of Huntingdon, Mr. Maxwell, in the report made by him thirteen years ago, averaged the fleece at 8lb, now it averages about 5lb; which shews a regular reduction in weight, according to the land in each county, the land in Rutland being better than that of Huntingdon. The present breeds, in both counties, are a mixture of the new Leicester with old Leicester, and new Leicester with old Lincolns; but they have more of the new Leicester in their present appearance than of either of the two old breeds. The reports given by the inhabitants substantiate this fact. One cause assigned for their sheep not thriving so well as the old breeds, is, their being so fine about the head, and what the old breeders called, of a *stripping* kind (bare-bellied); in consequence of which they are, during the summer months, so pestered with flies on their heads and flanks, as to occasion the almost total destruction of some that would otherwise be thriving sheep; especially the lambs, giving many of them such a stop as renders them poor against the winter: whilst those that are shorn, by their pelts being so delicate and thin, are apt to gall in unusual parts; and if any extreme of weather happen, either cold rain or hot sun, they suffer very severely; —burnt alive, or singed like a roast pig, during the heat, and in cold rain starved to death. But, to obviate this danger, the new Leicester breeder says, "Put jackets and caps on the sheep, and build houses for them to resort to in the heat of the day:" this sounds very well in theory, and may answer for ram merchants, who are letting out single rams at from 100*l.* or guineas to three; but the breeder of sheep, who has to sell his wool and mutton at the fair market price, by the pound

weight, cannot support such expenses. How much money it would take, to provide those accommodations throughout a county! and how much cloth and many tailors it would require to effect it! whilst, if one of this kind of sheep produce only 5lb of wool, which seems to be about the average, he takes one pound of it for his jacket and cap, or a fifth of his whole produce! Then there are the tailors' wages, after paying the manufacturer for making the cloth: these expenses probably amounting to the price of one pound more of the wool, there remain but 3lb to be sold for the breeder or grazier's profit: add to which, there is the house building, an expense not easily estimated, but perhaps it could not be defrayed for less than from 2*s.* to 2*s.* 6*d.* a house. I suppose the jacket, with care, may last two years; but the cap will want renewing yearly, or twice a year. The lambs do not require jackets; but they want caps, though they have produced no wool. However, these expenses are all unnecessary; for as profitable sheep have been produced, and are still produced, in some parts, without all this fuss and trouble. After all that has been said or done in regard to small, delicate animals, that man is the most valuable member of society both to himself and the public, who raises the most meat from a given quantity of land at the least expense; for every consumer expects to have a pound of mutton at the market price of mutton. I never saw the customer yet that was willing to pay more per pound for a joint of a Welsh sheep, weighing 8lb, than another would for a large Gloucester, or old Lincoln, weighing 15lb: and if the lands that now keep sheep weighing 50lb a carcase, would feed as many sheep of the weight of 80lb a carcase—which seems to be proved by the reports they have done, whilst they have shorn 9lb of wool, though now only 6lb—it is high time the public

were made acquainted with the proceeding, that the breeders may be induced to pursue a different plan, more particularly as those inconveniences rather multiply and increase unnecessary expenditure. It would ill become me, as an author, to suppress facts, notwithstanding I have many friends I could wish to serve; but although the practice may have enriched some few individuals, it has been at the expense of the public.

The rage of fashion has gained such an ascendancy, that in the first week of June, in the parts where those ram breeders live, it is common to see breeders galloping from place to place, as if fortunes were to be obtained by hiring rams, at more money than the male produce would give at a year old! But there is one consideration that renders this practice more engaging;—the breeder, after having entered into the spirit of the improvement, is regarded as a good member of society; and he may, in a manner, divest himself of the folly, by entering into another fashion of a similar description. However, all this falls hard on the consumer.

I could never discover that it requires much penetration to find out the profit of a sheep. When I first formed an acquaintance with Mr. Bakewell, his best sheep were let at about fifteen guineas the road, which I thought much too high; however, I ventured on two. The next year, when I went, Mr. Codd, of Ranby, had given forty guineas; and Mr. George Culley, and Mr. Sayle, had given the same sum. When I had looked over Mr. Bakewell's rams, behold! he asked me sixty guineas for the use of a ram to eighty ewes; in consequence of which I remonstrated with Mr. B. telling him I was no ram breeder, and therefore could not afford to give such a price—And why ask me more than Mr. Codd, Mr. Culley, and Co.? He pleased to say, I had chosen a better sheep, and he could not part with

it under the price he demanded: but, he said, he had sheep he would let me have at ten guineas. In reply, I told him, I had rather have another breeder's top than his cull: in which I see I was right to this day; for, notwithstanding Mr. B. had some very prime sheep, much better than they are now, I could clearly perceive they were too small, not such as would carry either much carcase or wool, though of good shape, with aptitude to fatten; and as I was a shearing seller, the improvement would not add any thing to the price of my wethers, but probably rather diminish it; while the only advantage I could expect to obtain, must arise from the sale of my cull or drape ewes, by their being made completely fat at an early period in the winter, and at an easy expense; but that, though a sort of convenience, had not a profit attached to it that would pay any such sum as he asked, as I was to put the ram but to eighty ewes, and to be at the expense of a teazer, &c.: from the produce I could not reckon on having more than thirty-five shearing wethers to sell, the price then (during the American war) being one guinea a piece for the best; consequently the whole would not have defrayed the hire of a ram—there would be nothing left to pay rent, and keep the family; therefore, I declined hiring any of Mr. B.'s rams, although I had a great desire to do so, could I have obtained them at a price that, like other farming produce, would have paid.

I have, in my former work, said much in commendation both of Mr. Bakewell and his stock, and I still retain the same opinion: his breed was advantageous at that time, and the benefit might have been continued, had the breeders acted with proper discretion. Mr. B.'s plan was a very good one, both for himself and his customers, if he had upheld his stock only as a corrector of numbers of faults which other sheep then

possessed; for he certainly had got his sheep into such a form, though in themselves always too small, with too little wool, that a cross from them, once in six or eight times, would have been of service, as they were very nearly free from vice. Their wool was not hairy; but probably, at the time I first saw them, they might not be more than a double cross from the old large Leicesters, from which, I understand, he chiefly bred his flock, with the sheep he bought of Mr. Stow: as the old Lincolns had then got more bone and pelt than they ought to have, with much coarse wool, the cross certainly might have been beneficial; and probably in the counties nearer London, where the sheep are at less distance from market, and ought to come at *earlier* ages, they might have wanted a cross once in every three or four years.

I have very great opportunities to judge of the best sort of animals, by spending my summers generally among the breeders and graziers, and associating during the winters with the salesmen at Smithfield; consequently, when I want to see the proof of any animals shewn in the market, by attending the butchers who kill them, I have my desire, and can thence draw the comparison: I am thus enabled to appreciate their perfections and imperfections, for let the breeders express themselves in ever so flowery or strong language over a bottle of wine at the market ordinary, they cannot cover their mistakes, if they have made any, at Smithfield. There is an anecdote of a grazier, who was in the market when his own sheep were sold, and the price being lower than he thought them worth, as they were high blood, he observed that the blood was worth all the money; to which the salesman coolly replied, they gave nothing for blood there.

After I had completed my excursions through Rut-

land and Huntingdon, I made a tour into the county of Lincoln, having heard the salesmen and butchers extol the sheep of that county, and Gloucester, above all others. I found many very useful sheep in the hands of the ram merchants, weighing from 120 to 150lb a carcase dead weight; and the wool improved, weighing from 14 to 18lb a fleece: these were rams of the best kinds. All these sheep had had a cross of a new Leicester ram from the extreme of very coarse ewes, termed old Lincolns; their carcases not heavier, if so heavy, but with fleeces weighing from 20 to 28, and even 29lb. This cross seemed to extend just as far as the London salesmen and butchers recommend—about one fifth: they had much finer features than formerly, but not nearly so fine as the full blood; the carcase was better covered with flesh and fat; and the wool reduced in weight 3 or 4lb a fleece, but finer, not so hairy, seemingly better suited to the wishes of the stapler, and not too tender, though it had retained a length proper for the comb, being probably of more value than before. They have more aptitude to fatten, making themselves fatter, and in less time, than they used to do: for those sheep termed old Lincolns were, many of them, flat-sided, thick at both extremities, and narrow in the middle; what is termed the scrag as thick, or thicker, near the head, than towards the shoulder—which is very improper, much uniformity being required in the make of the scrag of a sheep; it ought to be rather fine near the head, and keep increasing to the part joining the shoulder, near to which it cannot be too large, as there can scarcely be found a worse fault in a sheep than a very thin scrag, when it continues to be of equal thinness from the head to the shoulder. The wool of many of the old Lincolns was apt to cot, particularly round the neck, and more frequently on sheep with thick necks, or large collars,

generally, as before described, thicker nearer the ears than the shoulders: these cotted fleeces, though weighing heavy, are only of half the value of other wool, and therefore should be avoided; consequently the cross with the new Leicester sheep which have little wool, and that of a soft, weak sort, has been of infinite service.

Many persons have entertained the opinion, that heavy wool is a certain indication of a poor carcase; and it sometimes so happens, but not always. I have known, in my father's flock, with the utmost care, a wether sheep to have a cotted fleece every year, and become a fat carcase at last; and even as early in the season as sheep with wool of a different description: but sheep that produce that sort of wool are of a very bad kind. It was our custom, at my father's, at the time of shearing, to give all defective ewes, producing bad fleeces, or little wool, a drape mark, which was a mark under the ear with tar;—those we termed defective were cotted or bare-bellied: wool being lost before shorn, on any part, we called *stripping*. It has been frequently argued, that a sheep's having a light, small fleece, is a certain indication of a fat carcase; but the assertion is erroneous: for those ewes, of the long-wooled kind, with bare-bellies and bare necks, were more generally poor carcases, than those with heavy cotted fleeces: therefore either extreme is a fault. The new Leicesters that are of the stripping kind, are generally fat at the latter end of summer, and poorest of any in the spring; which proves them bad, as they are fat when mutton is plentiful, and poor when it is scarce: they likewise shear a small fleece, and lose a part before they are shorn. There is one common remark I have made, in forming an opinion of good or bad sheep, namely, that of all sheep, let the breed be what it may, long wool or short wool, if they have but fine features,

a smart healthy look, and quick eye, whatever be their size, the largest in the flock, by 4 or 5lb a quarter, is generally the fattest. As to size alone, I never found it, in any flock, a criterion; though most generally the largest are the best thrivers, on all sorts of keep, and in every season of the year: but, on the other hand, if ever so small, and even small boned, if they have a dull eye, and a large head according to their size, with wool about their cheeks, and extending round their eyes like an owl, and on their legs like a bantam hen, they will assuredly be found a poor, bad carcase.

Having finished my excursion in the county of Lincoln, I made a tour into Leicestershire, to visit the ram merchants in that county, and see some of the best rams in their possession. I found the very same defects in them I had discovered in the stock in the two counties of Rutland and Huntingdon:—not having the same inclination to fatten as formerly; being very short in the neck, and some of them crooked; holding down their heads, or being what are termed *dunks;* and when they moved their heads, shaking as if they had some natural infirmity: stumbling if they met with any obstruction, such as an ant-hill, or an open drain; and often, when moving quickly, tumbling down: a very thin scrag quite into the shoulders; the blade of the shoulder standing up higher than the chine, in a loose manner; their ribs round, like a barrel; narrow between the hucks, viz. near together; the rump short, and very thin towards the tail; the tail standing high, and straight with the back bone, or what is termed by some breeders *wiped away;* the thigh very thin, that is, being long in the leg, and short in the upper part of the thigh;—in fine, carrying very little weight in their most valuable parts, such as the leg and the loin: their greatest weight at the back of the shoulders, their brisket, and the fore

flank: the wool of a fine curled kind, short and mossy, without any on their bellies, and very little on their neck and arms, viz. from the knee to the lower part of the blade bone of the shoulder, and from the cameril half way up the leg, being, it may be fairly said, full half naked; the fleece of little value in quality, and the weight from 2½ to 5lb. As to fattening sheep of this kind, it is impossible, from their natural deformity;—similar to the human species, in which it may be observed that deformed persons are generally of small size, neither inclined to fatten nor flesh: and when sheep of this make come to be cut up, they prove very deceitful, giving less profit than even their bad appearance had promised. In the first place, the scrag *contains little* more than a mass of coagulated blood, of no use whatever; and the thin scrag and small tail the cutting butcher finds a certain indication of want of flesh in every other part, the same sort of thinness extending all along the chine; for if thick in those parts, the flesh would descend into the legs, shoulders, and even a reasonable proportion down the ribs, and between them and the shoulder: while, for want of what the butcher calls being *ripe*—dying full of fat within, round the kidneys, &c.—the outside is of a bluish-red colour, looking skinny, and when the entrails are taken out, and the carcase is hung up, it is so thin, that the light shines through it within three inches on each side of the back bone. I have seen many lots of this sort of sheep, bought by some of the cutting butchers, and at very low prices, one with another weighing 56lb a carcase, and from 7 to 9lb of loose fat: the butchers exclaim against them, saying, whatever price they buy them at, they never pay equal to sheep of a better form; the mutton of such sheep not selling so well, on the average, by 1*d.* a pound, which renders them very unprofitable to all parties.

At the same time, I have every reason to believe, that any given number of these sheep consume an equal proportion of food with sheep of a much greater weight, whilst they are tenderer, and require more nursing, even to render them eatable mutton: as, in the human species, it is well known there are deformed persons not weighing more than 8 or 9 stone who consume as much food as Mr. Lambert, who weighed 50 stone. I have drawn these comparisons to caution breeders against those sheep called *dunks*. I remember the celebrated ram breeder Mr. Walls, of Boothby, in the county of Lincoln, falling into the very same error; and Mr. Bakewell bought one of this sort of sheep, a shearing, at the high price of fifty guineas, and that at a time when the best rams in the county were selling at ten and fifteen guineas: but Mr. Bakewell soon discovered his mistake, and shortly afterwards bought the ram of Mr. Stow, at about fifteen guineas, from which he raised his noted breed. This shews, that on the choice of the ram depends the good or ill success of a man's flock. Those dunks of Mr. Wall's were a thick, short-moulded sheep, standing low; very short in the scrag; their ears remarkably short, with large mouths, short faces, the lips of many of them not covering their teeth, their head bending or hanging downwards, and the neck frequently distorted; the knees crooked, and bending inwards; but the bones of moderate size, neither very large nor very small. Mr. Hairby, of Spilsby, took a cross of this kind from Mr. Wall; and the offspring, from a sheep of a somewhat similar form, proved still more defective than the ram; so much so, that out of forty shearing rams there was scarcely one that was not deformed—either crooked in its fore legs, neck, or face; this mistake, therefore, was soon discovered: but Mr. Hairby took in ewes, the same season he produced these defective rams, at the

high price of half a guinea an ewe, and consequently there were many of the best breeders much deceived and highly disappointed, as the sheep of this kind were of small size and remarkably poor carcases.

During my surveys, I have seen many sheep of the new Leicester breed, very high blood, having much the same appearance as those dunks, and some few precisely similar. In one flock, which had descended from that of a person belonging to the society of the new Leicesters, there were fairly three descriptions of sheep, and all of the same breed; about one third of them inclined to be dunks, and some such in reality, that could not by any means be made fat, never weighing more than from 40 to 50lb a carcase, and the wool from 2½ to 3lb a fleece: one third were middling good sheep, that would weigh from 56 to 72lb a carcase, and the fleece from 4½ to 5½lb; the others were very good sheep of the kind, weighing from 80 to 100lb a carcase, the fleece from 5½ to 7 or 8lb. This flock was kept on very high keep, and on good land, and the business conducted with the greatest attention: there were 120 shearing wethers and ewes on as fine seeds as could grow. Having, during my excursion, noticed and described the defects in one of those breeder's flocks, of the high blood, he met me in Smithfield market some time afterwards, and, as we walked through the market, he kept pointing out the defective sheep. At the time of my survey, he did not know what I meant by the term *dunks*; and when I was at his house, having made him acquainted with their faults, he requested me to take a second ride through his flock, which I did, and pointed them out to him: he was then so thoroughly convinced of the propriety of my observation, that he asked me what he ought to do with them; I advised him to draw such of the lambs as were inclined to be dunks, and sell them, as good sheep would pay more money than

they would ever be worth: he accordingly culled twenty of those lambs, and drove them to market; and I have since seen him, when he told me, he could not meet with a purchaser foolish enough to buy them. This very breeder has gone to high prices for the new Leicester rams: but price does not distinguish the value of a ram; for I know the ram merchants, generally knowing the price a breeder gives, let him make choice of what ram he may, will ask him his usual price; and it is not at all uncommon for one man to obtain as good a sheep for ten guineas as another does for a hundred—even the very same sheep, at different seasons. Had this breeder, who has some of the best breeding land in England, bred his sheep of a right kind, the lambs, with the same food, would have readily sold as high as 30*s.* a piece: and he was so thoroughly satisfied of his error, that he went with me into the county of Lincoln, where he took three rams, neither of them weighing less than 140lb the carcase;—the ram merchant offered a very large bet that one weighed 200lb dead weight;—and their fleeces from 14 to 18lb. The offspring of such rams must be likely to be more profitable than those from rams weighing only from 48 to 60, or at most 72lb, and the wool but from 5 to 7lb a fleece. During the time I was in Leicestershire, it was the cry of all breeders, that they want more flesh and wool; but, as like is, in a great measure, to get like, I cannot imagine what the breeder expects from those small unuseful rams, which have been kept in the most pampered manner that could be invented, with frequently as much of the best of food to choose from, as would fatten an ox:—What size can we expect the offspring to be, when kept as store stock? Certainly such as I have described.

Some of the new Leicester carcases, when they hang up, appear excellent; but when cut, are generally

found to want a greater proportion of lean to their fa
Most of the sheep in this kingdom are bred by one ma
and fed by another; but the grazier's profit depends
much on the wool, and some small increase of carca
he will naturally prefer sheep of a large size, with mu
wool. The butcher's profit depends on the weight an
inside fat: as to outward appearance, that can nearly b
ascertained, but the inside cannot, therefore the but-
cher, when he kills sheep of a certain mark or brand
that turn out well, will seek for that in preference. Mr.
Bakewell's thorough contempt for loose fat and wool, wa
founded on a very improper idea:—the breeder, the gra-
zier, the butcher, are all partners, and there should be
no deception in trade.

The present new-fashioned Leicester sheep have *long*, thin legs, the same in the fore leg to the shoulder; are short in the carcase, with a small head and thin scrag; short in the rib, in the extreme; short in the rump, and light in the wool:—by standing high, they shew themselves at a distance; and they were expected to travel better. This seems to have been the opinion of those fashionable critics on the improvement necessary to correct some of their errors. They are even extending this kind of make to the South Downs; some of which have now legs like grey-hounds. These men seem to delight in deception, for I do not think they are improving the make of sheep; it is not the length of the leg that adds the weight of flesh required, though it will increase the weight of bone; and I have heard some of the cutting butchers say, that even the best of those sheep, weighing 12 stone, or 96lb a carcase, which is 24lb the quarter, will not cut a leg of more than 9lb; whilst the Gloucester or old Lincoln sheep, of an equal weight, will cut a leg of from 12 to 14lb. They have lately delighted more in show than in real use; for as to travelling,

I know no animal that travels better by being long in the leg; a horse with long legs, short neck, and his head low down, is well known to be of an improper make for the purpose: and he is not found to stand his work well with very short ribs: he ought to have his head up, and when standing to cover much ground; to do which, he must be long in the hind quarter—a quality much wanted in sheep; and, although no animal should be flat-sided, his ribs ought not to be short, shewing much light under his belly, which many of the new Leicesters do; for, by way of breeding them not to be gutty, they have been produced with ribs so short, that, when they have any distance to come to the London market, they appear to have no inside at all.

My reason for having paid so much attention to the new Leicester sheep, has arisen from the opinion of most authors, that all sheep ought to be of that make; but it is now allowed, by the best judges on carcases of mutton, that the Gloucester is the proper form for useful sheep, giving much flesh, well incorporated with a due proportion of fat.

SECTION XIV.

The live and dead Weights of different Breeds of Sheep exhibited in London, at the Smithfield Club, Lord Somerville's Show, and on some other Occasions by way of Comparison, the more fully to elucidate that important Matter.

Mr. Wall's Kent sheep, two years old, fed on grass.

	lb.		lb	lb.		lb.
No. 1 Live weight	20$3\frac{1}{2}$	Carcase	139	Fat 23$\frac{1}{4}$	Offal	41
2 Ditto . .	229$\frac{3}{4}$	Ditto .	158	Do. 21$\frac{3}{4}$	Do.	50
3 Ditto . .	230$\frac{3}{4}$	Ditto .	164	Do. 17$\frac{3}{4}$	Do.	49
Totals .	664		461	63		140

Offal less than $\frac{1}{4}$ by 25$\frac{3}{4}$lb.

Mr. Plaskett's new Leicester wether sheep, one year old, fed on cole and cabbage.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	148	Carcase	86	Fat	12	Offal	50
2 Ditto . . .	164	Ditto .	106	Do.	8½	Do.	48½
3 Ditto . . .	142	Ditto .	88	Do.	12	Do.	42
Totals .	454		280		32½		141½

Offal less than ⅓ by 10½lb.

Note.—Mr. Wall's three sheep weighed 60lb a carcase and ½lb over, and had 10lb of tallow and ½lb over, more than Mr. Plaskett's, with 1½lb less offal. These three wether sheep of Mr. P.'s, in class 10, obtained *the prize* of ten guineas at the Smithfield show, December, 1808: their esteemed value was said to be, lightness of offal.

Mr. Wall's sheep were killed by Mr. Searl, butcher, in the borough of Southwark, from whom I took the above weights in the same week as the show—but they were not exhibited:—this is a hint to the reader, that all large animals, even from the living weight *to the* dead, do not produce the most offal.

Mr. John Westcar's new Leicester wether sheep, fed on grass.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	188	Carcase	135	Fat	17	Offal	36
2 Ditto . . .	179	Ditto .	130	Do.	15	Do.	34
3 Ditto . . .	179	Ditto .	126	Do.	19	Do.	34
Totals .	546		391		51		104

Offal less than ⅓ by 5½lb.

The reader will observe, that these three sheep of Mr. Westcar's are particularly light in their offal; and of the new Leicester breed, as well as Mr. Plaskett's, but of a much better kind: there was one sheep of Mr. P.'s

that weighed but 86lb the carcase, and another that had but 8½lb of tallow in him. I had a sucking lamb killed at about five months and two weeks old, the carcase of which weighed 80lb, and it gave 9lb of tallow. Mr. Plaskett's sheep had been kept for about nineteen weeks on cole and cabbages, which are the most fattening food that can be given to sheep, lintseed cake excepted; and they had a sufficient time to fatten. I have known new Leicester sheep, at turnips and seeds, from February to June, which is only about thirteen weeks, gain 30lb a carcase and upwards; and it is very common for ewes of the Lincolnshire breeds, put lean into the marshes about the 14th of May, to make themselves good shambles mutton by August, which is only about twelve weeks: therefore, there was no excuse for either want of time or food.---But notwithstanding the lightness of offal in Mr. Westcar's sheep, they were much excelled by Mr. Hutchinson's cross (mentioned in page 300), which weighed, when living, 26 stone; after it was killed, the carcase weighed 268lb, and there appeared to be only 4 st. 2 lb of offal, or little more than one sixth of his weight.

In the course of this work I have made some remarks and observations on the very great difference in the new Leicester sheep; but the more fully to substantiate the fact, I judge it necessary to shew their difference in every stage; therefore, that the reader may see there are some of the new Leicester sheep better suited than all other kinds for particular situations, and others fit for none, I would merely refer the reader to Mr. Plaskett's whole stock at present, as it is certain those exhibited were his best. But to prove that I am not prejudiced against any breeder or grazier, I will give two instances of Mr. P.'s having introduced much better sheep at former shows.

Mr. Plaskett's new Leicester wether sheep, one year

	lb.		lb.		lb.	
No. 1 Live weight .	207	Carcase	148	Fat	13½	Offal
2 Ditto . . .	209	Ditto .	151	Do.	12¼	Do.
3 Ditto . . .	209	Ditto .	148	Do.	17	Do.
Totals .	625		447		42¾	

Offal less than ¼ by 21 lb.

Mr. Plaskett's new Leicester wether sheep, two years old.

	lb.		lb.		lb.	
No. 1 Live weight	178	Carcase	118	Fat	12	Offal
2 Ditto . . .	175	Ditto .	114	Do.	14	Do.
3 Ditto . . .	162	Ditto .	108	Do.	14	Do.
Totals .	515		340		40	

Offal more than ¼ by 7¾ lb.

Now, these six sheep seem to be on the average with other good sheep; but the late introduction of long legs thin thighs and shoulders, short rump, and thin scrag appears fairly to produce more offal in all stages.

Mr. Oldacre's new Leicester wether sheep, one year old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	168	Carcase	110	Fat	14	Offal	44
2 Ditto . . .	162	Do. .	105	Do.	14⅛	Do. .	43¼
3 Ditto . . .	164	Do. .	109	Do.	12	Do. .	43
Totals .	494		324		40⅛		130¼

Offal more than ¼ by 6 lb.

Mr. Thomas Moore's new Leicester wether sheep, two years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	208	Carcase	146	Fat	17¼	Offal	44¾
2 Ditto . . .	205	Do. .	142	Do.	14¼	Do. .	48¾
3 Ditto . . .	193	Do. .	134	Do.	13¼	Do. .	47¼
Totals .	608		422		45		141

Offal less than ¼ by 11 lb.

Mr. William Boultbee's new Leicester wether sheep, two years old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	186	Carcase	126	Fat 17	Offal	43
2 Ditto	188	Do.	128	Do. 16	Do.	44½
3 Ditto	199	Do.	130	Do. 14½	Do.	54
Totals	573		384	47½		141½

Offal more than ¼ by 1¾ lb.

Mr. Edward Platt's new Leicester wether sheep, one year old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	222	Carcase	145	Fat 23	Offal	54
2 Ditto	220	Do.	140	Do. 20	Do.	60
3 Ditto	217	Do.	137	Do. 21	Do.	59
Totals	659		422	64		173

Offal more than ¼ by 8¼ lb.

Earl of Macclesfield's new Leicester wether sheep, two years old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	183	Carcase	127	Fat 12	Offal	44
2 Ditto	192	Do.	127	Do. 20½	Do.	44½
3 Ditto	212	Do.	140	Do. 13½	Do.	58½
Totals	587		394	46		147

Offal more than ¼ by ¼ lb.

Mr. James Clother's Gloucester wether sheep, two years old, fed on grass.

	lb.		lb.	lb.		lb.
No. 1 Live weight	271	Carcase	177	Fat 20	Offal	74
2 Ditto	273	Do.	184	Do. 18	Do.	71
3 Ditto	272	Do.	184	Do. 19	Do.	69
Totals	816		545	57		214

Offal more than ¼ by 10 lb.

Thus it appears, that those long-wooled new Leicester sheep, twenty-four in number, which must be supposed to be of the best kinds, average 130¾lb a carcase, or 32½lb a quarter, and tallow 16lb each (exclusive of Mr. Plackett's prize sheep in December, 1808, which averaged only 93¼lb a carcase, or about 23¼lb a quarter, and tallow about 10¾lb each). It may also be seen that the Gloucester sheep, last recorded, average about 151*lb*, or 45lb a quarter nearly, a carcase, and tallow 19lb a sheep; which is 51lb a carcase more than the Leicesters, and 3lb of tallow. The Leicester sheep in offal average 46lb each, and the Gloucester 71lb nearly, which is about one third more than the Leicesters; but as the Gloucester sheep weigh, in meat and tallow, 54lb a sheep more than the Leicesters, three times 54lb being 162lb, whilst the Leicester sheeps' carcases and tallow weighed only 146lb, which is less by 36lb than the Gloucester sheep's over-weight; consequently, allowing the proportion of the over-weight of the Gloucesters, it pronounces them to have rather less offal than the Leicesters. And further, as a comparison between the Gloucesters and the Leicesters, it may be observed, that Mr. Boultbee's sheep, in weight of carcase and fat, average 128lb, with nearly 16lb of tallow, and they have 1lb more than one fourth offal, whilst Mr. Clother's Gloucesters have 10lb.

I would not wish the reader to suppose I have the least desire to depreciate the value of the Leicester sheep, but I think there is room for improvement.

Having pretty clearly elucidated the proportion of offal in the long-wooled sheep, I will give some comparisons of the offal in the short-wooled kinds. Though, in some trials as to the live and dead weight made by the butchers, the South Downs have been found to be half offal, and the Lincolns only one third.

Duke of Bedford's South Down wether sheep, one year old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	146	Carcase	93	Fat 14	Offal	39
2 Ditto	147	Do.	93	Do. 16	Do.	38
3 Ditto	149	Do.	95	Do. 16	Do.	38
Totals	442		281	46		115

Offal more than ¼ by 4½ lb.

Duke of Bedford's South Down wether sheep, two years old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	159	Carcase	101	Fat 17	Offal	41
2 Ditto	153	Do.	100	Do. 16	Do.	37
3 Ditto	166	Do.	109	Do. 15	Do.	42
Totals	478		310	48		120

Offal more than ¼ by ½ lb.

Mr. C. C. Western's South Down wether sheep, two years old.

	lb.		lb.	lb.		lb.
No. 1 Live weight	146	Carcase	93	Fat 14	Offal	39
2 Ditto	134	Do.	85	Do. 13	Do.	36
3 Ditto	146	Do.	94	Do. 16½	Do.	35½
Totals	426		272	43½		110½

Offal more than ¼ by 4½ lb.

Mr. Henry King's South Down wether sheep, fed on grass.

	lb.		lb.	lb.		lb.
No. 1 Live weight	148	Carcase	96	Fat 14½	Offal	37½
2 Ditto	145	Do.	99	Do. 12	Do.	34
3 Ditto	158	Do.	105	Do. 17	Do.	36
Totals	451		300	43½		107½

Offal less than ¼ by 5½ lb.

Duke of Bedford's South Down wether sheep, one year old.

	lb.		lb.		lb.		lb.
No. 1 Live weight	137¾	Carcase	94	Fat	21	Offal	22¾
2 Ditto . .	135½	Do. .	92	Do.	17	Do. .	26½
3 Ditto . .	134	Do. .	91	Do.	17	Do. .	26
Totals .	407¼		277		55		75¼

Offal less than ¼ by 6¾ lb.

Duke of Bedford's South Down wether sheep, one year old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	143	Carcase	100	Fat	16	Offal	27
2 Ditto . . .	145	Do. .	99	Do.	21	Do. .	25
3 Ditto . . .	141	Do. .	99	Do.	15	Do. .	27
Totals .	429		298		52		79

Offal less than ¼ by 6¾ lb.

Earl of Bridgewater's South Down wether sheep, three years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	146	Carcase	95	Fat	16	Offal	35
2 Ditto . . .	161	Do. .	105	Do.	17½	Do. .	38½
Totals .	307		200		33½		73½

Offal less than ¼ by 3½ lb.

Mr. Boy's South Down wether sheep, two years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	154	Carcase	100	Fat	14¾	Offal	39¼
2 Ditto . . .	149	Do .	98	Do.	14¾	Do. .	36¼
Totals .	303		198		29½		75½

Offal less than ¼ by ¼ lb.

Mr. King's South Down wether sheep, one year old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	134	Carcase	87	Fat	13¾	Offal	33¼
2 Ditto . . .	140	Ditto .	93	Do.	12	Do.	35
Totals .	274		180		25¾		68¼

Offal less than ¼ by ¼ lb.

Duke of Bedford's South Down wether sheep, two years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	153	Carcase	106	Fat	18½	Offal	28½
2 Ditto . . .	165	Ditto .	111	Do.	19	Do.	35
Totals .	318		217		37½		63½

Offal less than $\frac{1}{5}$ by $\frac{1}{4}$ lb.

Mr. Gunning's South Down wether sheep, two years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	163	Carcase	109	Fat	19½	Offal	34¾
2 Ditto . . .	153	Ditto .	104	Do.	18¾	Do. .	30¼
Totals .	316		213		38		65

Offal more than $\frac{1}{5}$ by 1¾ lb.

Mr. Robinson's Cheviot wether sheep, two years old.

	lb.		lb.		lb.		lb.
No. 1 Live weight .	123	Carcase	88	Fat	11¼	Offal	23¾
2 Ditto . . .	121	Ditto .	81	Do.	10½	Do. .	29½
Totals .	244		169		22		53

Offal more than $\frac{1}{5}$ by 4½ lb.

Now, the average of the South Down sheep (twenty-eight in number) is, the carcase 94¼ lb, or about 23½ lb a quarter, fat 16$\frac{1}{7}$ lb, offal 34 lb. Then taking the Duke of Bedford's sheep by themselves (being fourteen in number), they average 98¾ lb the carcase, or nearly 24¼ lb a quarter, fat 17 lb, and the offal 32¼ lb. The fifth part of the gross live weight of the duke's sheep is 414 lb; and the gross weight after they were killed, with the offal, 452 lb, or only 38 lb over; being but one fifth offal. Then take the remainder of those shew or trial sheep (fourteen in number); their average weight is, the carcase 90¼ lb, or 22½ lb a quarter; fat 15 lb, and the offal 33¼ lb nearly. The fifth part of their gross live weight is 414 lb; and the gross weight after they

were killed, with the offal, is 452 lb, which is 38 lb over, being one fifth offal.

The reader will observe, the duke's sheep are much superior; as they are 8 lb a carcase heavier, give 2 lb of tallow more, and are lighter in their offal by 1 lb: this is another proof that the smallest and lightest animals are not the lightest in their offal.

It appears also, that the Cheviot sheep, which are not an improved breed, are as light in their offal as the most improved kinds. The above calculations are made allowing the fat to be worth as much as the carcase; but as the fat is generally deemed offal, I will, to elucidate the matter more fully, estimate the carcases alone.

The live weight of the new Leicester sheep, twenty-four in number (exclusive of Mr. Plaskett's prize sheep in 1808), considering the tallow as offal, was 4507 lb, the third of which is 1502⅓ lb, and the dead weight of the offal 1106½ lb; consequently the dead weight is less than one third of their live weight by 396 lb, which is 16½ lb a sheep: from this experiment it appears that the best long-wooled sheep are more than two thirds of their live weight in carcase. The live weight of the South Downs, twenty-eight in number, considering their tallow as offal, was 4151 lb, the third of which is 1383⅔ lb, and the dead weight of their offal 1405 lb; consequently the dead weight of these sheep is more by 21⅓ lb than two thirds of their live weight; and this pronounces them not two thirds carcase, by nearly 1 lb a sheep. Now, the South Down sheep would appear to be still heavier in their offal, in comparison with the Leicesters, as there is a material difference in the weight of their skins; the Leicester sheep skins averaging 28 lb each, and the South Downs 18 lb each: hence it appears the South Down sheep, in proportion to their size, have more waste from their living to their dead weight than sheep of

larger size;—and there is nearly an equal weight of blood in a sheep of a small frame as in one much larger.

The following is an experiment with three large Wiltshire wether sheep, four years old, in length nine inches more than either a South Down or Leicester, and about three inches higher: these sheep just fair shambles meat.—They were killed by Mr. Harwood.

	lb.		lb.	lb.		lb.
No. 1 Live weight	192	Carcase	105	Fat 13¾	Offal	73¾
2 Ditto	180	Do.	101	Do. 17½	Do.	61½
3 Ditto	180	Do.	100	Do. 13	Do.	67
Totals	572		306	44¼		201¾

Offal more than $\frac{1}{3}$ by 11½ lb.

	lb.		lb.		lb.		lb.
No. 1 Skin	21	Horns 1¾	Head 6¾	Blood 7¼	Pluck, heart, liver, lights, entrails		37
2 Do.	19	Do. 1¼	Do. 6½	Do. 7	Do.		27
3 Do.	20	Do. 1¾	Do. 6	Do. 6¾	Do.		34
Totals	60	4¼	18¾	21¾			98

The living weight of these sheep, considering the tallow offal, was 572lb, the half of which is 286lb; and the dead weight of their offal 246lb, which is within 40lb of half, and is only about 12lb a sheep. These sheep were killed in the month of April, about three months after the prize sheep, consequently they might have gained 1lb of wool during that time, which adds to their weight of offal: and they were taken out of a lot of fifty, neither as the best nor as the worst, but to give a fair average of the whole; therefore the reader may form a better idea of the offal of this kind of sheep from this experiment, than from any of the former ones; as the sheep intended to be shewn for prizes, without any doubt, receive much greater attention than can be paid

to the whole stock of a farm, while they are chosen out of many, and are such as the owner thinks the lightest of offal. Probably this breed of sheep have not much more offal than some other breeds; for even Mr. Plaskett's prize sheep had nearly one third offal; and as there would be many in his lot with poorer carcases, and consequently heavier in their offal in proportion, it is a query with me, whether the whole of his would average lighter in their offals than those three Wiltshire sheep. Again, many of those prize sheep are more than three inches thick of fat, on all the joints except the legs; therefore, when they are pared down, and made ready for the consumer, it is doubtful whether there is not as much waste (as great a proportion of bone) *in their joints* as in those of the Wiltshire sheep: and if the parings were weighed for tallow, the same as the caul and gut fat, whether those fat sheep would not be nearly half offal from their living weight. I have elsewhere noticed in this work, my having seen a cutting butcher, in Newgate-market, pare 3½lb of fat off a neck of mutton weighing 8lb: suppose, then, for example, we take one of Mr. Oldacre's prize sheep, the carcase weighing 110lb, and allowing every joint, except the legs, to be pared in the same ratio, from the neck, breasts, shoulders, and loins, 28lb in the whole will go to the chandler, which will reduce the sheep's carcase to 82lb, and add 28lb to the offal: the latter having been 59lb, will be increased to 87lb; take that from his live weight, 168lb, and there remain 81lb useable mutton, proving the offal heavier by 6lb than the mutton sold to the consumer, and the animal more than half offal.

As this work will doubtless be perused by many persons who are unacquainted with the practice of the London butchers, and it being an infrequent custom to cut and pare meat in country places in the manner

they do in London, many readers may be staggered on seeing such a calculation made, as the paring off 28 lb of fat from a carcase weighing only 110 lb: but it is necessarily the method of the London cutting butcher to cut his meat agreeably to his customers' wishes. A great or the greater part of the mutton consumed in the metropolis is cut into steaks, and cooked on a gridiron; therefore, although the consumer seems to have much bone in proportion to the flesh, if it were not pared, he would pay for still more waste, as, by the process of cooking, the fat part, when laid on the gridiron, would all run into the fire, and be an entire loss both to him and to the public; whereas it is now put to serviceable uses, for candles, sope, &c. There are few people, by choice, would wish to have more than one eighth fat, in proportion to the lean, and many of the joints of the very fat mutton here alluded to, are so interlarded with fat, as to be more than sufficient for the palate of the consumer; therefore, the fat that is altogether a solid body is entirely cut off to the very bone, as the Londoners in general are remarkable for not eating fat; many of them will not even taste it, and as they have a power of commanding what they like the best, no one can blame them. In a general way, the lean of moderately fat meat is the best eating; and, in all those over-fed animals, the lean is the only part that can be agreeably eaten; for which reason those sheep with small bones, little flesh, and much fat, are of less value in the London markets than in many other parts of the kingdom: as to the size of a sheep, when the joints are cut into steaks, that is of little consequence, provided there be but a great proportion of it lean, and that of a good quality. From this consideration the breeder of sheep ought to endeavour to produce them with such qualities as suit the consumer.

SECTION XV.

Experiments on some different Kinds of Sheep; the Weights of their Heads, Scrags, and Necks; shewing the comparative Difference, in each Kind, between the Bone and the Flesh.

Heads.

	Weight of carcase. lb. oz.	Weight of head. lb. oz.	Weight of bone. lb. oz.	Weight of flesh. lb. oz.
Gloucester .	212 -	7 -	2 4½	4 11½
Warwick .	120 -	5 -	1 15	3 1
Leicester .	88 -	4 -	1 10½	2 [illegible]

Necks.

	Whole neck. lb. oz.	Scrag cut off neck. lb. oz.	Scrag alone. lb. oz.	Wt. of bone in neck. lb. oz.	Wt. of bone in scrag. lb. oz.	Wt. of bone in whole [illegible] lb. oz.
Warwick	10 2	7 -	3 2	0 11	0 5½	1 0½
Leicester	7 -	5 2	1 14	0 7½	0 6½	0 14

It may be observed, in the experiment of the heads, that there are in the Gloucester sheep, considering the head as entirely offal, 30lb of useful meat to 1lb of offal: in the Warwick 24lb to 1lb of offal; and in the new Leicester 22lb to 1lb of offal: this, therefore, proves that small sheep, with fine heads, carry a greater proportion of offal than the large or even the middle size. By the same rule, the necks altogether of the Warwick and the Leicester seem to be nearly the same; but in the scrag there is a very great inequality, as in the Leicester fine scrag there is only a proportion of four to one of flesh to that of bone, while in the Warwick the proportion of flesh to bone is as nine to one.

I have inserted the above short calculation merely for the purpose of giving an insight into the subject of offal,

which seems to have been very improperly understood by both breeders and authors; and I intend more fully to discuss the matter in another part of this work.

It may be useful information to the reader, to know what proportion in size some kinds of sheep bear one to another; but I will first give an account of the several sheep's weights, as they were taken a few days after the Smithfield show, 1806, that the reader may the more readily refer to each sheep when he has the account in weight before him.

Gloucester sheep, three years old.

		St.	lb.	St.	lb.
One sheep,	fore quarters	13	2	23	7
	hind ditto	10	5		
Two ditto,	fore quarters	25	2	46	2
	one hind quarter	5	1		
	one ditto	5	3		
	two hind quarters	10	4		
One sheep,	fore quarters	12	5½	23	1½
	hind ditto	10	4		
One sheep,	the whole carcase	26	1	48	1
One sheep,	ditto	22	0		
		141	3½	141	3½

Note.—The average of these six sheep is 23 stone 4lb 9¼oz.; the weight of the heads, one 7lb, one 5lb, one 5½lb, and three 6lb each. The price sold at per stone, the largest sheep, 26 stone 1lb, at 6*s.* per stone, 8lb to the stone; the rest of the sheep, some of the hind quarters 6*s.* per stone, the fore quarters 5*s.* 4*d.* a stone. The produce said to be forty-seven guineas; and one sheep's carcase made 7*l.* 16*s.* 9*d.*—This account taken from the butchers' books.

Lincoln sheep, three years old.

	st.	lb.	st.
One sheep's carcase, head on	27	4	113
Four ditto	90	4	

Note.—The average of these five sheep is 23 stone 13 oz. each; the average per quarter, 47 lb 4 oz.—Th account taken from the salesman's books.

Kent sheep, three years old---Six in number; t heaviest 19 stone 5 lb: they averaged 19 stone. T heads of these sheep 5¼ lb: the average per quarter 3 —These sheep bred and fed by Mr. Wall.

Leicester prize sheep, two years old—Three *in* numb average weight 17 stone a sheep. They were a cro not all new Leicester.---Weight taken from the butch books. One of these sheep weighed 19 stone.

Leicester, one-year-old shearings---Three in numb averaged 12 stone 4 lb a carcase, or 25 lb a quarte This account from the butcher's books. These, true Leicesters.

The large Lincoln and Gloucester were both o length, 42 inches; the large Leicester were 37½ inc long. There was one three-shear sheep, of the Leicester breed, in the market, which weighed 15 st 3 lb, or 30¾ lb a quarter, and was 33½ inches long. height of the Lincoln, Gloucester, and large Leices was nearly equal, about 2 feet 6 inches; and of small Leicester, 2 feet. A Hertford, weighing 15 st or 30 lb a quarter; height 3 feet 10 inches, len 3 feet 6 inches.---The length of all these sheep tak with the heads cut off, and hanging up, from the end the neck to the part where the tail is set on: height, standing.---Wool, the large Leicester, 8 Gloucester, 14 lb; Lincoln, 16 lb; Kent, about 9 lb.

being the general opinion that sheep made so fat are scarcely fit for use, from the price they sold for alive, my curiosity was excited to learn how they sold in the flesh market, which has already been stated;—the large Gloucesters at from 5*s.* 4*d.* to 6*s.* a stone, and the largest sheep whole 6*s.* a stone. The five Lincolns were sold about the same time, the hind quarters at 5*s.* a stone, and the fore quarters at 4*s.* 10*d.*; averaging about 181lb a carcase: this was in Newgate-market. At the very next salesman's shop, on the same day, there were twenty Welsh sheep's carcases, from a nobleman's park, weighing about 32lb a carcase; which the salesman offered at 2*s.* a stone, but he had no purchasers. This induced me to search for the South Down carcases, as they are the most esteemed; by which I might be enabled to form a judgment of the best price for good market mutton, having seen that of the two extremes. The price asked for South Downs was, 4*s.* 10*d.* a stone for hind quarters, and 4*s.* 8*d.* for fore quarters: these sheep were nice useable mutton, sufficiently fat, or rather fatter than in general the trade in London requires. I measured the Lincoln, the depth of fat being about 5 inches, particularly one, which was thick at the brisket. I saw many customers for both the Gloucesters and Lincolns, which sold much more rapidly than any mutton in the market. I waited to see the sale of the Welsh; they were at length sold, the carcases at 6*s.* 8*d.* each. Thus, the haunches of one of those large sheep are sold for nearly as much as a score of Welsh sheep:—so much for small animals and fine flavour!

Experiment by Mr. James Clother, at Milton, near Tewkesbury, Gloucestershire, of a cross breed.—Three wether sheep, with extraordinarily good shape and perfections. The first ewes bred from, the horned Wiltshire, with shorter legs than many of that kind, of the

best sort: the ram put to them of Mr. Fowler's [illegible] bought at his sale at five guineas: the offspring of [illegible] put to a Cotswold ram; the ewes from that cross put [illegible] a ram out of a horned Wiltshire ewe, got by a Cots[illegible] ram; the offspring from that cross of ewes put [illegible] Leicester ram, cost two guineas. Those three were either by the last Leicester ram or one got by him; the two rams were put to their road together. It is almost needless to say, that they were polled, and three shear.—Their living weight, with the wool shorn, was 816lb. Mr. Philip Smith, Whitechapel, killed one, the weight of which, taken from his books, was as follows:

	Living wt. lb.	Dead carcase lb.
One sheep	273	184
Inside fat		18
Liver		7
Skin, blood, and entrails, &c.		64
Total	273	273

Note.—This sheep's carcase sold, 23 stone, at about 7*s.* 3½*d.* a stone, or altogether eight guineas: the two haunches sold for 6*l.*, or 3*l.* each.—Average 46lb per quarter.

Mr. Portress, butcher, Minories, killed the other two sheep; their weights, taken from his book were as follow:—

	Living wt. lb.	Dead carcase lb.
One sheep	272	178
Inside fat		20
Liver		7
Skin, blood, entrails, &c.		67
Total	272	273

	Living wt. lb.	Dead wt. carcase. lb.
One sheep	271	176
Inside fat		19
Liver		7
Skin, blood, entrails, &c.		69
Total .	271	271

This cross has been much reprobated by almost all breeders; but the foregoing examples shew that a mixture of breeds, with proper judgment, is to be crowned with success; and that putting a new Leicester ram to any large ewe will generally produce profitable sheep, which is one convincing proof of his being in want of size. It is necessary to be observed, in breeding animals, that the dam should be a good nurse, and the sire an animal of aptitude to fatten; but in sheep another material consideration is required, namely WOOL. The general opinion is, that short and long wool will not do to be mixed, which, indeed, has been my idea, but, from experience, I see myself wrong. In crossing for wool, it is well to breed combing wool from carding-wool ewes and combing wool rams; but the cross will not answer for combing wool, by putting carding-wool rams to combing-wool ewes---it makes all the difference. I saw some hogs in Hertfordshire, bred from Hertford horned ewes of very large size, got by a rather inferior Leicestershire ram, which, to my utter surprise, had much better combing wool upon them than the ram, and that in greater quantity; they would, at least, shear 10lb a fleece, with an even top and fine hair; being, on the whole, most capital combing wool, scarcely any better to be found: there seemed to be the toughness required in combing wool, with a very equal fleece in

every part. The Gloucester sheep above recorde only eaten grass and hay, it not being much of a t country where th · came from; the quantity of they shear at the season is from 10 to 12Q, as the f informed me: being naked, I could form no judg By way of comparison, I will give the sheep she the Smithfield club, December, 1807.

Mr. R. M. Robinson's three one-year-old new Leic

The return from Mr. Arrowsmith, butcher, of K street, Bloomsbury, who killed these sheep, state dead weights as follow:—

	Sheep No. 1.		Sheep No. 2.		
	St.	*lb.*	*St.*	*lb.*	*S*
Carcase, or quarters and heads	17	0	16	2	14
Loose fat	2	4½	1	6½	1

Supposing the heads of these sheep to weigh 4½ lb the heaviest sheep will weigh about 32¾ lb per qu the average of the three together about 30½ lb.

The Reverend Thomas Plaskett's one-year-old new Leic

The return from Mr. Henry King, of New market, who killed these sheep, states the dead we as follow:—

	Sheep No. 1.		Sheep No. 2.		S N S
	St.	*lb.*	*St.*	*lb.*	
Carcase, or quarters and heads	15	2	14	6	1
Loose fat	1	4	1	6	
Skins	2	0½	2	2	
Plucks (heart, liver, lights) .	0	4¾	0	4½	0
Entrails and contents . . .	1	6½	1	5½	1
Blood and loss in killing . .	1	0½	0	7	0
Total .	22	2	21	7	2
Live weights just before slaughtered	22	2	21	7	2

Note.—These sheep average per quarter, altogether, about 28¼ lb; allowing the heads to weigh about 13 lb, and the offal, as near as possible, one third of their whole weight.

Class X. Prize of TEN GUINEAS.—*Reverend Thomas Plaskett's three two-year-old new Leicesters.*

The return from Mr. Henry King, as before, who killed these three sheep, states the dead weights as follow :—

	Sheep No. 1. St.	lb.	Sheep No. 2. St.	lb.	Sheep No. 3. St.	lb.
Carcase, or quarters and heads	18	4	18	7	18	4
Loose fat	1	5½	1	4¾	2	1
Skins	2	5	2	4½	2	5
Plucks (heart, liver, lights) .	0	5	0	4¾	0	4½
Entrails and contents . . .	1	3	1	4	1	3
Blood, and loss in killing . .	1	0½	1	0	0	7½
Total .	25	7	26	1	26	1
Live weights just before slaughtered	23	7	26	1	26	1

Note.—These sheep average per quarter, altogether, 34⅓ lb; allowing for their heads about 13 lb, and their offal, each about ¼ and a little over.

Mr. Robert Mitchel Robinson's three two-year-old new Leicesters.

The return from Mr. Arrowsmith, butcher, of King-street, Bloomsbury, who killed these sheep, states the dead weights as follow :—

	Sheep No. 1. St.	lb.	Sheep No. 2. St.	lb.	Sheep No. 3. St.	lb.
Carcase, or quarters and head	18	1	16	5	16	5
Loose fat	2	2¾	2	0½	1	6¾

Note.—These sheep average per quarter, allowing 13 lb for their heads, about 34½ lb.

Class XI. Prize of TEN GUINEAS.—*Mr. Henry King, junior, three one-year-old South Downs.*

The return from Mr. Henry King, senior, of Newmarket, who killed these sheep, states the dead weight as follow:—

	Sheep No. 1.		Sheep No. 2.		Sheep No. 3.	
	St.	lb.	St.	lb.	St.	lb.
Carcase, or quarters and heads	12	5	11	5	12	2
Loose fat	2	0	1	5½	1	1
Skins	1	4	1	4	1	3
Plucks (heart, liver, lights) .	0	4½	0	4	0	4
Entrails and contents . . .	1	4½	1	2½	1	2
Blood, and loss in killing . .	1	0½	0	6½	0	6
Total .	19	2	17	4	17	3
Live weights just before slaughtered	19	2	17	4	17	3

Note.—These sheep average per quarter, allowing 12 lb for the heads, altogether 23¼ lb, and offal about one third of their whole weight.

His Grace the Duke of Bedford's three one-year-old South Downs.

The return from Mr. Paul Giblett, butcher, No 138, New Bond-street, who killed these sheep, states the dead weights as follow:—

	Sheep No. 1.		Sheep No. 2.		Sheep No. 3.	
	St.	lb.	St.	lb.	St.	lb.
Carcase, or quarters	11	5	11	5	11	7
Heads	0	4½	0	4½	0	4
Loose fat	1	6	2	0	2	0
Skins	1	5	1	3	1	4

	St.	lb.	St.	lb.	St.	lb.
Brought forward .	15	4¼	15	4½	15	7
Plucks (heart, liver, lights) .	0	3	0	4	0	3
Entrails, empty	1	1	1	0	1	1
Blood, contents of entrails, and loss in killing	1	1¾	1	2½	1	4
Total .	18	2	18	3	18	5
Live weights just before slaughtered	18	2	18	3	18	5

Note.—These three sheep average per quarter, altogether, their heads off, about 28¾ lb; offal something more than one third of their whole weight.

Class XII. Prize of TEN GUINEAS.—*His Grace the Duke of Bedford's three two-year-old South Downs.*

The return from Mr. Paul Giblett, as before, who killed these sheep, states the dead weights as follow:—

	Sheep No. 1. St.	lb.	Sheep No. 2. St.	lb.	Sheep No. 3. St.	lb.
Carcase, or quarters . . .	12	5	12	4	13	5
Heads	0	4¼	0	4¼	0	4¾
Loose fat	2	1	2	0	1	7
Skins	1	6	1	4	1	5
Plucks (heart, liver, lights) .	0	3	0	3	0	3
Entrails, empty	1	0	1	6	1	0
Blood, contents of entrails, and loss in killing . . .	1	3¾	1	3¾	1	5¾
Total .	19	7	19	1	20	6
Live weights just before slaughtered	19	7	19	1	20	6

Note.—These three sheep average per quarter, altogether, their heads off, about 25¾ lb; offal not quite one third of their whole weight.

Charles Callis Western, Esq. three two-year-old Southern Downs.

The return from Mr. Henry King, of Newgate-market, who killed these sheep, states the dead weights as follow :—

	Sheep No. 1.		Sheep No. 2.		Sheep No. 3.	
	St.	*lb.*	*St.*	*lb.*	*St.*	*lb.*
Carcase, or quarters, and heads	12	1	11	1	12	2
Loose fat	1	6	1	5	2	0½
Skins	1	6½	1	5	1	3½
Plucks (heart, liver, lights) .	0	4½	0	3¾	0	4½
Entrails and contents . . .	1	2	1	1	1	1½
Blood, and loss in killing . .	0	6	0	6¼	0	6½
Total .	18	2	16	6	18	2
Live weights just before slaughtered	18	2	16	6	18	2

Note.—These three sheep average per quarter, allowing 13lb for the heads, about 25lb; offal about one third of their whole weight.

It will be observed, the sheep exhibited at the Smithfield show average, in offal, about one third of their living weight; but the large Leicesters rather less than the small: of the prime Gloucesters, before mentioned, no calculation can be made, but from their living weight, which was about 273lb; the heaviest carcass when dead being only 184lb, there is a deficiency of but 89lb, or not quite one third, giving nearly as small a share of offal as those delicate sheep: from this comparison it appears that the garbage of animals is nearly in proportion to their size.

Having gone through the weights of the prese

breeds of sheep, which are supposed to have been improved, I will lay before my reader a record in my possession of some sheep sold in Newgate-market seventeen years ago, their produce being as follows.

Sheep belonging to Mr. Walters, of Market Deeping, Lincolnshire, sold by Mr. Thomas Boys, junior, in Newgate-market, from February 12th, 1791, to April 11th, 1792.

Sheep. No.	St.	lb.	Price per lb. s.	d.	Value. L.	s.	d.
1	19	0	3	8	3	9	8
1	19	1	3	4	3	3	9
1	19	1	3	4	3	3	9
1	19	2	3	8	3	10	7
1	19	3	4	0	3	17	6
1	19	5	4	0	3	18	6
1 *E*	19	6	3	4	3	5	10
1	19	6	3	4	3	5	10
1	20	1	3	8	3	13	9
1	20	3	3	10	3	18	1
1	20	3	3	8	3	14	8
1	20	3	3	4	3	7	11
1	20	5	4	0	4	2	6
1	21	1	3	4	3	10	5
1	21	5	3	8	3	19	3
1	18	5	4	4	4	0	8
1	18	5	3	4	3	2	1
1	18	3	3	4	3	1	3
1	18	2	3	4	3	0	10
1	18	2	3	4	3	0	10
1	18	1	3	4	3	0	5
1	18	0	3	4	3	0	0
1	18	0	4	0	3	12	0
23	445	7			80	0	1

Sheep. No.	St.	lb.	Price per lb. s.	d.	Value. L.	s.	d.
1	17	7	3	10	2	13	7
1	17	7	2	10	2	10	7
1	17	6	3	4	2	19	2
1	17	6	3	4	2	19	2
1	17	5	3	8	3	4	7
1	17	5	3	8	3	4	7
1	17	4	3	8	3	4	2
1	17	3	2	10	2	9	2
1	17	2	3	8	3	3	3
1	17	1	3	8	3	2	9
1	17	1	3	4	2	17	1
1	17	0	3	8	3	2	4
1	16	7	3	8	3	1	10
1	16	7	3	2	2	13	5
1	16	7	3	0	2	10	7
1	16	6	3	0	2	10	3
1 *e*	16	6	4	0	3	7	0
1	16	5	3	4	2	15	5
1 *e*	16	5	3	4	2	15	5
1	16	4	3	8	3	0	6
1	16	3	3	8	3	0	0
1	16	3	4	0	3	5	6
22	376	4			64	10	4

Note.—The foregoing forty-five carcases of mutton averaged upwards of 18 stone 2 lb a sheep, and produced 3*l.* 4*s.* 2½*d.* each: they were killed at home, and carried about 27 lb of loose fat on the average: they made 1*l.* each for their offal: when added together, the forty-five sheep gave more than 4*l.* 2*s.* each, sold in uncommonly cheap times in the dead markets. Those marked *e* were ewes; and that with *E* carried 42 lb of loose fat. In 1801, carcases sold at 9*d.* or 10*d.* per pound in the dead markets. Thus, at 10*d.* per pound, 822 stone 3 lb, or 6579 lb, would amount to 274*l.* 2*s.* 6*d.*; and supposing the offals at that period to produce but 2*s.* a sheep more, which would be 20*s.* a sheep, 45*l.* added to the above sum will make it 319*l.* 2*s.* 6*d.*

I have given the foregoing account to substantiate the many objections I have made to small animals, as those sheep were not prepared for show, but grazed in a common way; and, judging by them, it does not appear that the breed of long-wooled sheep is improved, but, on the contrary, from the rage of fashion, they are diminished both in carcase and in wool, which will be more particularly noticed under that head. But, notwithstanding there is so strong conviction against the fine, small-boned sheep, the critic still holds out, that the smallest are the best! I will beg leave to quote an anecdote.—During my survey of the county of Rutland, being in company with some principal breeders and graziers, I observed, I had always found the largest of a good sort of animals the best; in which opinion one of the party, a good farmer and breeder of sheep, differed with me, holding out in objection that the smallest were preferable; however, during the evening, he very politely asked me to go to see him, and particularly to view his sheep. I accepted his kind invitation; and, a day being appointed, the gentleman farmer at whose house we

were accompanied me. When we reached the farmer's, he took us among his breeding ewes, a hundred and twenty in number, in one pasture, of the new Leicester kind, nearly full blood, and very fine stock they were; but he apologised for not having drawn them, as they would have shewn to more advantage. I agreed in the propriety of so doing; and said, if he pleased, we would put them in a fold, and he might then draw out any number he chose. We accordingly folded them, and he drew out forty-two: when he had so done, he asked me how I liked them. I replied, very much; but, as he had selected nearly all the largest to an ewe, I remonstrated, by saying, "I suppose you cannot call them the best, as they are the largest: I have been induced to give you this trouble from the conversation we had at your neighbour's, when you said the smallest were the most valuable; and I therefore expected, while you were choosing these ewes, that you would have shewn me the other lot for the best."—I am persuaded many critics would be caught in the same snare if they were tried.

Having pretty fully discussed this matter, and recorded many experimental facts relating to the carcase of sheep, I will give an experiment or two in regard to food, in which I have found myself much disappointed, and somewhat in aptitude to fatten; for, by bringing theory into practice, I have confuted many of my former ideas.

The following experiment was made in Ireland, by George Grierson, Esq. at Rothwell, near Dublin, with two sheep;—one, a delicate new Leicester; the other, a large Irish, in size more like a jackass than a sheep:—the food, hay and turnips, was weighed to them every day; their living weight taken when put up, and they were afterwards weighed every fourteen days, to shew their increase. The truth of this experiment may be relied on, as Mr. Grierson was kind enough to lend me the book in which the account was

kept; and as I lived some time with him, I had a opportunity of knowing what sheep he possessed, mar being very good new Leicesters, imported at high price

		Irish sheep.				*Leicester sheep.*			
		Consumption.				Consumption.			
Date. 1802.		Hay.		Turnips.		Hay.		Turnips.	
		St.	lb.	St.	lb.	St.	lb.	St.	lb.
January	23	0	7	0	0	0	7	0	0
	24	0	0	1	3	0	0	0	13
	25	0	0	0	12	0	0	0	10
	26	0	0	0	10	0	0	0	8
	27	0	0	0	4	0	5	0	8
	28	0	0	0	7	0	0	0	5
	29	0	0	0	6	0	0	0	5
	30	0	5	0	5	0	5	0	6
	31	0	5	0	6	0	0	0	5
February	1	0	0	0	12	0	0	0	12
	2	0	5	1	2	0	5	1	2
	3	0	0	1	2	0	0	1	2
	4	0	5	1	2	0	0	1	2
	5	0	0	1	2	0	5	1	2
		1	13	10	3	1	13	9	10
	6	0	0	1	2	0	0	1	2
	7	0	5	1	2	0	5	1	2
	8	0	5	1	2	0	5	1	2
	9	0	0	1	6	0	0	1	4
	10	0	5	1	8	0	5	1	6
	11	0	5	1	4	0	5	1	4
	12	0	0	1	6	0	0	1	6
	13	0	5	1	8	0	5	1	6
	14	0	5	1	10	0	5	1	10
	15	0	5	1	10	0	0	1	10
	16	0	0	2	0	0	0	2	0
	17	0	5	1	4	0	5	1	4
	18	0	6	1	10	0	6	1	12
	19	0	8	1	10	0	0	1	10
		3	12	20	12	2	13	20	8

	Irish sheep.				*Leicester sheep.*			
	Consumption.				Consumption.			
Date.	Hay.		Turnips.		Hay.		Turnips.	
1802.	*St.*	*lb.*	*St.*	*lb.*	*St.*	*lb.*	*St.*	*lb.*
February 20	0	0	1	10	0	0	1	10
21	0	0	2	2	0	0	2	2
22	0	6	1	10	0	6	1	10
23	0	6	1	10	0	0	1	10
24	0	6	1	10	0	5	2	2
25	0	0	2	2	0	0	1	10
26	0	0	2	2	0	0	2	2
27	0	5	2	2	0	5	2	2
28	0	5	2	2	0	0	2	2
March 1	0	5	2	8	0	5	2	8
2	0	0	2	2	0	0	2	2
3	0	5	1	10	0	0	1	10
4	0	5	2	2	0	5	2	2
5	0	6	2	2	0	0	2	2
	3	7	28	4	1	12	28	4
6	0	6	2	2	0	5	1	10
7	0	5	1	10	0	0	2	2
8	0	5	2	2	0	5	2	2
9	0	5	2	2	0	0	2	2
10	0	5	2	2	0	5	2	2
11	0	4	2	2	0	0	2	2
12	0	6	2	8	0	0	2	8
13	0	0	2	2	0	5	2	2
14	0	5	2	2	0	0	2	2
15	0	0	2	2	0	0	2	2
16	0	5	2	2	0	5	2	2
17	0	5	2	2	0	0	2	2
18	0	4	2	8	0	4	2	8
19	0	0	1	10	0	0	1	10
	3	7	30	0	2	1	30	0

Date. 1802.	*Irish sheep.* Consumption. Hay. *St.*	*lb.*	Turnips. *St.*	*lb.*	*Leicester sheep.* Consumption. Hay. *St.*	*lb.*	Turnips. *St.*	*lb.*
March 20	0	5	2	2	0	5	2	2
21	0	5	2	2	0	0	2	2
22	0	0	2	2	0	0	2	2
23	0	5	2	2	0	5	2	2
24	0	5	1	10	0	0	1	10
25	0	0	2	2	0	0	2	2
26	0	5	2	2	0	5	2	2
27	0	5	2	2	0	0	2	2
28	0	5	1	4	0	5	1	4
29	0	0	1	10	0	0	1	10
30	0	5	1	4	0	5	1	4
31	0	5	0	8	0	5	0	8
April 1	0	4	1	4	0	0	1	4
2	0	5	1	10	0	5	1	10
	3	12	24	8	2	7	24	8
3	0	5	1	10	0	0	1	4
4	0	0	1	10	0	5	1	6
5	0	5	1	4	0	0	1	4
6	0	5	1	10	0	5	1	4
7	0	5	1	10	0	0	1	0
(Ending)	1	6	8	2	0	10	6	4

Recapitulation.

Date. 1802.	*Irish sheep.* Consumption. Hay. *St.*	*lb.*	Turnips. *St.*	*lb.*	*Leicester she* Consumption. Hay. *St.*	*lb.*	Tur *S.*
February 5	1	13	10	3	1	13	9
19	3	12	20	12	2	13	20
March 5	3	7	28	4	1	12	28
19	3	7	30	-	2	1	30
April 2	3	12	24	8	2	7	24
7	1	6	8	2	-	10	6
Totals	18	1	122	1	12	0	119

	Irish sheep. Live weight. lb.	*Leicester sheep.* Live weight. lb.
January 23	164	154
February 6	175	157
20	183½	169½
March 6	185½	171½
20	189	172
April 3	196	182
First weight	164	154
Increase	32	28

The preceding experiment was tried from January 23d till April 7th, 1802, being seventy-five days, or nearly half a year;—a very sufficient time for the Leicester to shew his extolled good qualities, and not at all in favour of the Irish sheep, as it is allowed that large animals require longer time to bring them to perfection, and more especially in such a contrast as this. I expected the Irish sheep to have consumed nearly one third more food than the Leicester, and the Leicester to have fed in one third of the time, or that he would have got almost as fat as he could be made;—for there is, in all animals, a certain degree of fatness, and having attained that pitch, they must stop: but I am thoroughly convinced that the new Leicester sheep are by no means equal to what they were some years back. It is plainly seen they eat as much, or very nearly, as other sheep, which from their appearance would not have been imagined; but observation and various experiments have given me reason to think they always did eat nearly as much as other sheep, at the same time requiring their food to be of a better kind than that of many others; though there certainly was a period when they would fatten quicker than any

other sheep; nevertheless, the system at that time
wrong, for they always had too much fat for their
When I returned from America, I perceived a wonde
change, and had the audacity to tell Mr. Buckley
either fed or bred worse than they used to do, as
sheep then were not at all extraordinary. All the bre
ers at that time, except Mr. Buckley, were feeding the
rams on Swedish turnips cut; and I had a very unfa
vourable opinion of cutting turnips, even Swedes, which,
before I left England, I had seen tried, by sowing the
Norfolk white on the same land, and the sheep regularly
refused the Swedish turnips. Mr. Buckley was feedin
his rams on cole, which I knew of all other food to be
the quickest and most fattening; and his *ram hogs* wer
the fattest of any I handled: but I had handled M
John Codd's, of Ranby, before he had any Leiceste
blood, and they were much fatter, at the same seaso
which caused me some surprise. It seems my conjectu
at that time was right, as there are now many of the ne
Leicesters which nothing will make equal to what the
used to be: even some of them come poorer to marke
from any good land, than other sheep, and so very ligh
that the butchers are fearful of buying them, many
the very best blood weighing not more than 6 stone
carcase, or 12 lb a quarter, and being so thin in fles
that when they hang up the light shines through the
I am rather fearful much of the breed always went in
the mouth, as the rams in Leicestershire were of la
years unfairly kept, or very unlike other pasture sheep
and there seems to be too strong a proof of their declin
in value, by their sale at Woburn sheep-shearing las
year, where there were some lots of five ewes sold a
low as 33*s.* and 34*s.* a head;—though the Wobur
Leicester sheep are descended from the highest bloo
and that under the immediate superintendance of t

breeders themselves, a Dorset grass lamb at nine months averages a greater price: and good mutton being at the time 6*s.* a stone, if the carcases, not putting any value on the offal, weighed 6 stone, they would have been worth that money to the butcher.

In regard to the food consumed in Mr. Grierson's experiment, the Irish sheep ate 6 st. 1 lb of hay more than the Leicester in nearly eleven weeks; valuing the hay at 4*l.* a ton, it will be worth about 2*s.* 3*d.*: of turnips, 2 st. 9 lb; taking them at 4*l.* an acre, the expense would be about 1½*d.*; and valuing them as for sheep kept by the week, at the rate these two sheep ate (the Irish sheep averaging 22 lb 12 oz. daily, and the Leicester 22 lb 4 oz.), 2 st. 9 lb is but 37 lb, which, at 22 lb a day, will be only one and a half day's keep, at 6*d.* a week, or about 1½*d.*; that added to the 2*s.* 3*d.*, will be 2*s.* 4½*d.*: now, as the Irish sheep increased 4 lb more than the Leicester, that, at 9*d.* a pound, will be 3*s.*, which is 7½*d.* profit in favour of the Irish sheep in the seventy-five days.

I will give another experiment on the respective increase made by two different kinds of sheep, both being put in the same pasture. The account given to me is as follows.—

A trial of Kent and Leicester sheep.

This trial was made by the Earl of Thanet, at Hothfield, with six new Leicester sheep, sent by Mr. Buckley, and six Kent sheep, sent by Mr. Wall; they were put together August 23d, and weighed on the 25th, 1803.—Slaughtered at Ashford, the 14th of January, 1805, being two years old off.

		lb.	*lb.*
Weighed when put together,	six Leicester sheep .	808	difference 65
	six Kent	743	

Leicester sheep.

	Live weight lb.	oz.	Carcase. lb.	oz.	Fat. lb.	oz.	Offal. lb.	oz.
No. 1	171	-	110	10	15	7	43	14
2	146	8	95	8	10	3	39	0
3	160	-	99	-	14	4	43	13
4	161	-	98	8	11	15	39	-
5	162	2	100	5	10	-	39	1
6	175	-	112	14	13	12	47	6
	975	10	616	13	75	9	277	1

Kent Sheep.

	Live weight. lb.	oz.	Carcase. lb.	oz.	Fat. lb.	oz.	Offal. lb.	oz.
No. 1	172	-	112	12	15	5	43	-
2	174	-	111	11	16	8	45	-
3	165	12	103	14	12	-	48	10
4	198	8	129	4	17	10	51	-
5	194	8	129	4	17	13	46	14
6	182	-	117	-	19	4	44	12
	1086	12	703	13	98	8	279	4
			616	13	75	9	277	1
			87	-	22	15	2	3

The above account was taken in the presence Earl of Thanet. The Kent sheep being 65 lb light the Leicester sheep, when put together, mak gainings of the former in the whole 152 lb of t with 22 lb 15 oz. of fat, and 2 lb 3 oz. of offal, mo the latter. It appears from this experiment, th Wall's sheep had not more offal, according t weight, than the Leicesters; but I am of opini the whole of the carcases, the flesh and fat, be

lected from the bones, there would have been found more offal in the Leicesters than in the Kents: for it may be seen in this work, that although the bones of some animals appear small to the eye, yet when they come to be weighed, on some account they weigh heavier, in proportion to their flesh, than larger bones. Thus, when theory is brought into practice, it often proves contrary to general opinion:—a result in which I have myself experienced much disappointment.

The accident which brought this experiment to my knowledge, was the means of affording me some further information on the subject, which I will relate.—I was walking in Smithfield, and passing the office-door of Mr. Jones, who keeps the accounts and cash for the salesmen in the market, he came out, and I being in habits of friendship with him, we entered into conversation. He had this account in his hand; I enquired what it was; he said, it contained the weight of twelve sheep which had been tried—as above. On looking in the paper, I found that the Leicester sheep came directly from Mr. Buckley, one of the most celebrated breeders of the best new Leicesters; and, examining the statement, to my utter surprise, I saw that the Kent sheep had made the greatest increase. This excited my curiosity, and induced me to accompany Mr. Jones to Mr. Boys, who is a carcase salesman in Newgate-market, to make some further enquiry respecting the Kent sheep: when there, Mr. King, who is likewise a carcase butcher and salesman in that market, entered the shop. I was at that time unacquainted with the kind of sheep called Kents, but supposed it to be a new term for some very famous breed: on the contrary, those salesmen said, they were a middling kind of sheep, that died pretty full of fat, not horned, long in the leg, standing high, and long in the carcase, and much better sheep in their

hind quarters than the Leicesters; longer in the ne with fine wool, of a combing kind. After I left the men, I went into the shop of a cutting butcher in the market, who at that time cut up a great many of the ne Leicesters (he has since totally declined it); when, telli him the circumstance, he, as well as myself, was muc surprised. A conversation coming on respecting the ne Leicester sheep, he said, they latterly had not been so good as they were some years ago; their form was much altered for the worse, and they had become a very unprofitable sheep for the cutting butcher, being so much heavier in the fore than in the hind quarter, the latter selling at 1*d.* or 1½*d.* a pound on the average more; and in the fore quarter, even if not fat in the extreme, there was scarcely any lean: all the joints in the fore quarter were obliged to be pared, to render them agreeable to his customers, from which he sustained a great loss in the course of a year in his business. He said, he had just pared as much fat off a neck of mutton, which weighed 8 lb when whole, as reduced it to 4½ lb; and the fat at that time selling 2*d.* per pound lower than the joints, he consequently lost 7*d.* on that joint; he reckoned up the loss, in the same ratio, and it came, on the whole carcase, to from 6*s.* to 6*s.* 6*d.* a sheep; which was as much as, or more than, the butcher's profit. From these considerations, he has desisted from cutting this breed of sheep; the loss being great both to him and the consumer: for there being so small a proportion of lean, it caused the joints to be light in his bill, and not useful to his customers, as, when trimmed, they were heavy in bone, and light in flesh. I have known this butcher have from forty to fifty haunches hanging up at one time, all of the new Leicester or half breed, which he has changed to Gloucester and Lincoln, and now and then a Warwick, as the cutting butchers all say the best

Leicester sheep now come from Warwickshire, though they are not so heavy as they were about twenty years since, on the average, by one fourth more, in that county. However, this experiment was very improperly made, on the side of Mr. Buckley's sheep, therefore I consider it no criterion. In the first place, those sheep of Mr. Wall's bearing the name of being the common breed of Kent is wrong; they are much better; and it is the general opinion of the London butchers, that they have a cross of Leicester in them, of which the butchers do not disapprove in any sheep, although they dislike the full blood. Again, the Leicester sheep were brought from their native soil, and, although to much better land, to feed not so congenial to them as seeds and turnips. Mr. Buckley's farm is poor land; but his sheep are commonly kept on artificials, which I am convinced, from my experience on the Leicester sheep, are particularly adapted for that breed. Mr. Sayle, of Wentbridge, in Yorkshire, had 200 sheep at turnips in Rosington field; and in the first week in February an accident happened to one, which was killed, and it weighed only 48 lb the carcase, or 12 lb a quarter; and those sheep were averaged at that time to weigh no more: but in the month of May they were sold in lots in Wakefield market, when they averaged at least 19 lb a quarter, which wa an increase of about 28 lb a carcase in twelve weeks, or three months. This may, at first sight, stagger some readers, but it was only about 5¼ ounces a day; and it will be hereafter seen, I had a pig that gained 2½ lb daily for 104 days: nor do I think it uncommon for a sheep to gain 5 or 6 ounces a day, indeed I am of opinion there are many sheep that do, particularly in the Lincolnshire marshes, where many ewes that have lost their lambs, and which are very poor when put to grass in the month of May, in the course of three months make themselves

fat mutton. Now, those sheep of Mr. Buckley's, wh they were put to feed, allowing about half of their livi weight for offal, &c. would average 20 lb a quart and after being kept in a fattening state nearly a ye and half, they averaged but about 25½ lb, which was onl about 13¼ lb a carcase in twelve months, or 20 lb in eig teen months. Mr. Wall's sheep, when put to feed, averaged 22½ lb a quarter: and when they were killed they averaged 29½ lb a quarter: thus, in the same ratio wit the other sheep, they gained about 18¼ lb a carcase in twelve months, or 28 lb in eighteen months; which seems a suitable proportion if at grass, as during the winter months sheep are thought, at grass, to do well if they retain what they have acquired in the summer. But, from some cause or other, Mr. Buckley's sheep must have done very ill, not like other sheep; for although many of the new Leicesters are too small to be profitable, and of a bad form for the cutting butcher, there are sheep to be found among them most certainly superior in aptitude to fatten, and that will carry a greater proportion of fat for their size than most other breeds; but they require high keep, and dry land. I know, from my own experience, that the new Leicester sheep do not thrive in the rich Lincolnshire marshes, in the winter months, so well as some other long-wooled sheep of the real Lincolnshire breed, which have no such aptitude to fatten, on turnips, seeds, or any artificial keep. It was a given opinion with Mr. Bakewell, that his sheep suited all soils; which was ridiculous to a degree. I had an experiment tried, by a cross of the true Lincolnshire ewe put to a Leicester ram bred by Mr. John Codd of Ranby, and a Lincolnshire ewe put to a true Durham ram; two of the offspring, taken at half-year-olds, were put on a piece of the Boston land, of Mr. Fydell's—no better land in England, if any so good—and they were kept c

that land until three years old; when, during each winter, the Leicester did much worse than the Durham. The Leicester sheep are rather tender in their bowels on rich marsh land, and inclined to purge; and so are all sheep that do not thrive in the winter. I have seen many instances of the same kind in the Lincolnshire marshes; and in all probability this might be the case with Mr Buckley's sheep in the Romney marshes. I am, therefore, of opinion, if the experiment were tried by taking some of Mr. Wall's sheep to Mr. Buckley's farm, and putting them to feed with some of his stock, both poor, that Mr. Buckley's sheep would fatten in half the time required by Mr. Wall's, although his sheep are very good, and widely different from the general run of Kents.

That the reader may not be misled by this experiment, I will describe the true Kent sheep; as, after this very extraordinary project, I made it my business to examine the Kent sheep at Smithfield.—They are a lengthy sheep, not very broad on the top, but they continue their width from the shoulders to the part where the tail is set on better than some other breeds, which is an excellent property in all sheep; they stand rather high, have fine combing wool, and are altogether a middling kind of sheep. The best lots I have seen, when brought to Smithfield, are of about a suitable fatness for the consumption in London: the best average about 88 lb a carcase, or 22 lb a quarter. Their weight is not great for their age, as they are chiefly three years old, and kept on the best land, near market. They bear no comparison with the Lincoln, Gloucester, Warwick, or the heaviest of the Leicesters—those in London called part old and part new Leicesters.

To return to Mr. Bakewell's notion, that his sheep were proper for all soils and situations, I will, by way of

comparison, propose a contrast.—Take six of the ve
best new Leicesters Mr. Bakewell ever bred, and six
the Pennestone sheep, and having weighed them, p
them on the Pennestone hills in Yorkshire, or any soc
rocky heath-land (where there are many valuable shee
according to the pasture, constantly kept): if the shee
bred on the common be weighed in April, they will ne
be found to have improved, but by August they will have
increased a little, while the Leicesters are in all proba-
bility starving with hunger; or should they live during
a year, they will be considerably reduced in weight.
Then reverse the trial:—take six of the Pennestone shee
into Leicestershire, weigh them and six poor new Lei-
cesters, and let the twelve feed together on their ar-
tificials—seed and turnips—for one whole year: I think
some of the best large Leicesters would gain as much in
that time as the Pennestone would weigh, as they are
seldom heavier than from 12 to 16 lb a quarter. Mos
animals succeed best on the land where they are bred
but, at all events, if they are moved, take them to bette
land, though that will not always prove advantageous. It
is a very wrong idea to suppose that sheep will all thrive
and fatten on good land; those mountain sheep prefe
the bud of a thorn, or even the bark of trees, to turnips
I was riding one day in Yorkshire in company with
man who kept many sheep at that feed in the winter
and as we rode by a field of turnips, I saw a number o
those Pennestone sheep folded upon them, at on
corner; they had eaten off every leaf from the thorns
and peeled off the bark: the man laughed, and said,
person might as well attempt to feed hogs on stones a
such common sheep on turnips; he had more than onc
tried to do so, but he never could make any of them fa
for they would almost starve before they would eat tu
nips (it will be found the same, in a certain degree, wi

pasture sheep, which also thrive best where bred). I knew an instance of the Hertford sheep being tried on the heath land near Lincoln, which seemed somewhat similar to their former situation; but they proved so unhealthy, that many of them died, and there was much money lost by the project. The Dorset, which is the most profitable ewe in the kingdom, I am of opinion would not have her season, so as to afford equal profit, in any other but an adjoining county. Neither will forest or mountain sheep thrive on low land, so well as high, if of ever so much richer nature. Of this I had a decisive experiment when I lived at Slane, in Ireland. A neighbour had bought one hundred of the horned sheep from the Wicklow hills, with an intention to fatten them on his eddishes, on some very fine meadow land by the side of the river Boyne, all inclosed with stone walls six feet high, about eight or ten acres in a pasture: but when they had eaten all this eddish, they were poorer than when they came off the mountains: he then gave them hay during the winter, and they had the run on this grass. Nevertheless, these sheep, on this fine land, did not fatten at all, but were very much dissatisfied with their situation; and, although the pastures were so particularly well fenced, they leaped over the walls, and in the morning would be found in different directions at some miles distance. Finding it impossible to fatten them in his pastures, he offered them to me, observing, as I had a deer-park, they might be confined there. To oblige him, I bought them. I put them on a piece of land, about eight acres, inclosed with walls eight feet high, that had been taken off for the purpose of shooting the deer;—rather a low situation: they had not been there more than an hour, before they leaped the walls, and were straying. Seeing this, I thought I might as well attempt to keep so many

rocks in a pasture. It being the season for claging or docking sheep, I had them put into a house; as their tails were long, I thought of cutting them by way of ornament: having docked one of them, I let him go when, smarting from the operation, and feeling the blood drop on his legs, he began to run, leaped over several walls, went into the deer park, got upon a high part, and there stood looking about him: therefore I did not venture to cut off any more tails. I then considered the nature of those sheep—their having been bred and pastured on mountains: and having a piece of very high land, about 150 English acres, situated on the tops of rocky hills, covered with furze and other wild plants (though very good grass in the valleys and between the rocks, but scarcely any fences about it; many parts that would not keep in new Leicester sheep), I put them on it, and they never attempted to quit the place, although on one side there were many fields of corn, clover, &c. joined by the worst of fences. There were also about seventy horses and cattle pastured on that mountain. These wild sheep did not at that time, the first week in May, weigh more than 12 lb a quarter the best of them, some not more than 9. I killed one of the smallest the last week in June, when it weighed 14½ lb a quarter. In the first week in July, I sent twenty to Smithfield, in Dublin, and they proved very fine mutton, died very ripe, with much loose fat (12 and 14 lb), and I guessed them to weigh 16 lb a quarter; but on examination, I found some of them weighed 19 lb a quarter, the salesman being a much better judge than myself: he sold them readily at very high prices, as I thought. This kind of sheep handle very differently from pasture sheep, are much closer in the fat and flesh, and weigh heavier according to their outward appear-

ance; which is one reason why the flesh eats more juicy, as it retains the juices in cooking much better than mutton that looks open like blown veal.

The reader will observe, that what I alluded to in Mr. Buckley's sheep, I have endeavoured to elucidate by the foregoing circumstance; as those wild sheep would only feed at liberty on mountainous land, which was the pasture nature directed them to choose, such plants growing upon it as they liked. And it may be seen, all sheep move, or pasture, in a direction with the sun, particularly mountain sheep: and, if they can find shelter, they always lie on dry ground, on a hill, but more especially the mountain sheep, to which nature directs them for security in heavy snows and stormy weather; for were sheep on mountains to creep into hollows and holes during large snows, as pasture sheep do, half of them would be lost. It is further worth observation, those wild, uncultivated sheep, from having pasture proper for their fattening, gained in about nine weeks 16 lb a carcase, at the least; and I killed one of the largest, that I thought the best—though there were many as good, and probably better, amongst them, for I do not pretend to be a proper judge in handling mountain sheep—in the last week in August, which weighed 20 lb a quarter round, and 21 lb behind; as he died so very ripe and full of fat, his kidneys were so well covered, that he was heavier behind than before. Now this sheep, which was kept about fifteen weeks, gained 32 lb of the best of mutton; and Mr. Buckley's fine, well-bred, improved breed, gained only 12 lb in nearly eighteen months: therefore the experiment must have been wrong managed, or it proves the Leicesters the worst of all sheep, which is certainly false. It may be seen in an experiment in stall-feeding sheep in Ireland—which is very improper treatment for any sheep—that the Leicester in-

creased 28 lb, and the Irish sheep 32 lb, in seventy-six days; and my hogs, only half a year old when put to turnips, increased from about 12 lb a quarter, or 48 lb a carcase, to 20 lb a quarter, or 80 lb a carcase, from the first week in December to the month of May, and into June, before they were all killed, which was about six months. I am enabled to judge of their average weight from an accident happening to one of them the first week they were put to turnips, when it was slaughtered, and weighed 12 lb a quarter. But, notwithstanding those young sheep, of a large size, grew so much in six months, growing animals are allowed not to fatten so well as when they have attained their full size, consequently those sheep of Mr. Buckley's, and likewise Mr. Wall's, were either as good as they could be made at the time they were put to feed, or ill managed afterwards, for it appears they did little more than keep what they had, like stores.

SECTION XVI.

Fold Observations and Remarks.

By reading authors on the practice of folding sheep, and hearing the general opinion, I was very naturally led to believe the system a good one. I accordingly made a trial of folding when I lived at Slane, in Ireland, and, I thought, in the most correct manner;—it was at the time I took the lambs from the ewes. I first put 200 ewes, of such as I thought old and wished to fatten, into a fold-yard, having cribs proper to hold their food, which was from a crop of fine tares then in full bloom. I had a space mown in the field, large enough to make a fold to hold the whole 200, with hurdles. Having inclosed this space, I turned the sheep in at night, and had as many tares put into cribs as they could eat: very

early in the morning they were again fed; and when they had satisfied themselves they were driven from the fold to some part well supplied with grass, and various kinds of weeds, as we had many plantations where there were intervals of land left for a coach-road, or *drive* as it is there called, and within the plantations was much ivy, which grows remarkably fine in that country. Knowing ivy to be a plant of which sheep are extremely fond, and there being many weeds which they seemed to prefer to grass, I expected them to fatten, as they had plenty before them both night and day: but in this proceeding I found myself completely disappointed; for when they had been one month so managed, kept as I thought in the most luxuriant manner, comparatively like fattening pigs, I clearly saw they were not thriving so well as the other ewes on pastures; on the contrary, they had become poorer, which induced me to give up the trial. I still, however, retained an idea that it was for want of system, the sheep being of the large long-wooled kind, and not used to the fold, &c.

After my return to England, I was appointed by the Honourable Board of Agriculture to survey the county of Bucks, where the practice being pretty general, I for some time thought the farmers were making the best use of every thing, by pasturing their sheep in the daytime on highways, and on banks in open or common field and wastes of different kinds, and at night, to drop their manure, on lands intended for profitable crops—wheat, barley, turnips, &c. which I supposed must add greatly to the profit; but to my utter astonishment, when I took an account of the produce, and compared the several parishes that practised folding and those that did not, I found the returns to be much less in the former than in the latter. The year following I was

their dung to be rich: one full good crop produced another; for as the straw from the crops was abundant, the dung-hill became so likewise: the seeds kept many sheep, and the winter's turnips put them in high condition: the summer's seeds supported them in the same manner; so that the land fattened the sheep, and the sheep the land. I observe Mr. Young, secretary to the Board of Agriculture, in his report of this county, mentions a circumstance of Mr. J. Wright, then of Risholme, making a trial of the folding process, by buying a flock of Hertfordshire sheep, and hiring a shepherd from the same place; but it neither improved the land, nor did the sheep thrive so well as in their own county. I have heard Mr. Wright say, he was a great loser by the speculation, as the sheep proved very unhealthy. This failure might be supposed, by men who are prejudiced in favour of folding, to have arisen from want of management; though, Mr. Wright being so provident as, when he bought the sheep, to hire the shepherd, there can be no grounds for such an opinion: but, as I have repeatedly observed, sheep, or almost any kind of stock, generally thrive best on the land where bred. Mr. Young likewise makes a remark on folding near Grantham, which in fact was the only part, and the sheep looked miserably. There was formerly some little folding near Bigg, and Caster; but, since the inclosures, I believe there is not a fold in the county. Some readers, from report, may think the comparison of Huntingdon, Dorset, &c. with Lincoln unfair, as, from the great number of fat animals the latter county sends to Smithfield, and also into Yorkshire, it might be supposed all rich land. I apprehend there is some as good grass land in it, if not better than any in England; and some as good tillage, for instance, a small part towards the Trent: but there is a much larger proportion of wold, poor land: and

some on the tower of Moor, near Tattershall, as poor as in any county. I look upon the county of Bucks as being very superior, on the average. It is merely system that has rendered much of the heath and wolds of Lincolnshire so productive: the county of Bucks is not so properly inclosed, and dairy farming is not an improvement to land. But there are many similar soils both in Bucks and Huntingdon, where there is little or no dairying, and on which the same mode of sheep farming might be adopted as is in the county of Lincoln, by paying more attention to the turnip crops, which are very much neglected in all the folding counties I have surveyed: it is the very same in Dorset. In all those counties the process of folding seems to have arisen from open commons, that the shepherd might know where to find his sheep in a morning, without considering the nature of the fold: thus those half-starved sheep, with little or no flesh on their bones, and very little wool, by being penned up in folds on ploughed lands half dis after running about all the day for a mouthful of victual and perhaps scarcely getting that, with half a bellyful cannot have much to leave, and that containing but a very small portion of nutricious matter. There another strong objection to this process; which is, that the sun's power, during a hot day, not only carries away, by exhalation, all the saline particles they may have left, but, as far as the urine of the sheep has penetrated, the sun exhausts the juices from the soil, and therefore, in very dry summers, they do more harm than good. The reader may convince himself of the truth of this observation, by only attending to the urine of cattle horses, &c. on pasture land in summer;—the spot where it falls, in hot weather, will become red, all the grass roots being destroyed: this has generally been ascribed to the power of the urine, which is certainly right, but the

sun is the operating cause, by exhaling the saline particles of the urine; and, at the same time, the pores of the plants, and likewise the mould, being opened by the urine, it dries up their juices, and the moisture on the spot, thereby rendering it sterile and barren. On the other hand, where urine, or any rich juicy matter, is lodged during the winter, vegetation will be luxuriant; the cause of which is equally obvious;—the sun in the winter season not having that burning or drying effect, the plants imbibe the saline particles as food: therefore, the difference is precisely this, that folding in winter is good, and in summer bad. On those dry soils, turnips ought to be raised both for improvement of the land and the sheep: winter folding fattens sheep and land; folds in summer injure both, and in the end impoverish the farmer. I do not know a single argument in favour of summer folding, except that it be conducive to health, which some of the Dorsetshire farmers seem to think, particularly as a preventive to the resp; and so far I doubt not but it may, as the resp is occasioned by the stomach being over-full, which is seldom the case with summer-folded sheep. But then there is this to be observed, dogs and shepherds must be kept, which are great disturbers of sheep—the most innocent animals I believe existing, and which, if we only consider nature, ought to rest quietly: their flesh is intended for the food of man, but by this improper treatment it becomes the support of dogs, crows, ravens, &c.; and the loss is great to the public, as well as to the owner. A pasture sheep, under the care of a good shepherd, is seldom lost, and makes 20*s.* the carcase, the skin 7*s.*, loose fat 3*s.*, in all 30*s.*; while the poor folded sheep returns little more than the value of skin, 2*s.* or 2*s.* 6*d.*: for when those poor starved sheep come to be put to fatten, by their being stinted when young, and their

constitution broken, their size is small, all of them a long time in fattening, and some never can be mad for the shambles. Therefore I am thoroughly convin that a good healthy sheep, bought at his full worth, a put on turnips, or any high expensive keeping, w generally pay more money for any given quantity food, than one or even several of those poor miser sheep will be worth, on the same keep for the same time. To repeat a simile that I used when treating a cattle, a sheep may be compared to a clew of thr which when large augments more rapidly in windi so it is with respect to a large-sized sheep, which, fattening, must necessarily increase proportionably quicker than a poor diminutive one. I have known one hundred wethers, put to turnips, pay 30s. a piece for the winter;—but they were not small sheep.

It may be necessary to prove, how far the practice of folding tends to injure other lands.—The little dung sheep carry to the fold, must be gathered from some other part of the farm; and they are driven some distance to and from the fold, scattering the dung on their passage, on roads and highways, which is an entire loss. Great expense is incurred in attending those sheep, and moving the folds; the hurdles are also another heavy expense; while the land very generally lies without any crop during the summer, which is not only a serious loss, but a real injury to the soil, by its being exposed to the sun all that time, bringing nothing to the dung-hill: again, the sheep are diminished to about one fourth the number that would be kept if they remained quiet in their pastures, which the farmers allow to be the fact. Sheep being converted into dung-carts, and made to do the work of horses, oxen, &c. common reason will convince any one is not a province belonging to them: their fleece demands that they should have every

encouragement to bring that most valuable article to perfection. A folded sheep and one kept on pasture unmolested, may be compared to a working horse and a horse that lives entirely at his ease without labour. But although I condemn the practice of folding, there is no general rule without an exception; and I admit it may be beneficial to land in the winter. It is commonly adopted in some parts of Kent, where manure is much wanted for the hop-grounds: sheep are there folded during the winter, and fed on lintseed cake, which is found to afford very good dressing. A sheep eats about 1½ lb daily; which, at the present price, 20*l.* a ton, will be 2½*d* a day, or 17½*d.* a week: this food, therefore, is very expensive, as a sheep requires, at least, three months to fatten, consequently costing, in that time, 17*s.* 6*d.*

If we draw a comparison between the treatment which sheep receive in the Lincolnshire marshes and that of those folded sheep, it will afford a decisive proof as to the management sheep require:—the former are quietly pastured for a whole year on the same land, never moved until they are sent to market; for although the land in those marshes is of so superior a quality to the land in some of the folding counties, if they were harrassed about as the folded sheep are, there would not be a fat sheep found in the whole extent of the marsh; and the Lincolnshire shepherds know, from experience, that were the pasture sheep to be got into a fold once a week, and only caught one by one, and put out again immediately, it would prevent their becoming fat. I therefore conclude with being perfectly satisfied, that the folding of sheep is an idle, unprofitable practice, of carrying dung to land. But, notwithstanding I condemn the measure *in toto*, I will give a trial of the sorts of sheep most proper to fold, for the consideration of the reader.

Trial made by the Marquis of Bath, Longleat, Wilts.

An Account of the progressive Improvement of a Flock of Sheep, of different Kinds, kept together and folded for three Years, in order to ascertain their respective Merits for Wiltshire Husbandry; and afterwards fattened and killed at the same Time.

Sort of sheep, all being lambs of 1791.	Average weight, July, 1792, when put to flock.	Average value, July, 1792, after being shorn.	Three years' wool; 1793, 1794, 1795. Weight.	Three years' wool; 1793, 1794, 1795. Value.	Weight per sheep, July, 1795, after being folded three years.	Increase during three years' folding.	Weight and value of mutton when killed, December, 1795. Weight.	Weight and value of mutton when killed, December, 1795. Value.	Improvements on original value, including two years' wool.
	lb.	*s. d.*	*lb. oz.*	*s. d.*	*lb.*	*lb.*	*lb.*	*L. s. d.*	*L. s. d.*
Leicester	105	19 8¼	14 11¼	11 0	125	20	97½	1 19 9	1 11 0¾
Cotteswold	95	17 9¾	15 12	11 9¾	108½	13½	76	1 18 0	1 12 0
Dorsetshire	119	22 3¾	10 0½	10 0¼	141	22	83½	2 1 9	*1 9 5¼
Wiltshire	98¾	18 6	8 9¾	8 11	140	41¼	82½	2 1 3	1 11 8
Mendip	95¾	17 11¼	10 6½	11 2¾	136½	40¾	82	2 1 0	1 14 3½
South Down	82½	15 5½	7 15	10 4½	129½	46¾	84½	2 1 6	1 14 3½

In the foregoing experiment, regard must be had, not only to the comparative improvement of the several kinds of sheep, but also to the comparative quantity of food consumed by each; it being a well-ascertained fact, that during the time they are kept, either at work or in folds, the food consumed is nearly in proportion to their weight: hence, while eight South Down sheep have improved in an equal degree to ten Dorsets, it will be seen the food that supported the ten Dorsets would have maintained fifteen South Downs. The object of the trial was, to determine what kind of sheep would best bear hard keeping, and folding. The sheep were kept on a tract of very poor heathy land, not worth 3*s.* an acre, and thence driven to fold every night (chiefly on arable land) from one to two miles distant from their food: the result seems to prove that the lesser kind of sheep are the hardiest. From the small increase in weight of the Leicester and Cotteswold during the time they are folded, it appears that the long-wooled sheep are not fit for that purpose; and as the kinds of horned sheep (the Dorset, Wilts, and Mendip) have improved in value in an inverse ratio to their original size, it seems that increasing the size of animals has rendered them less hardy. The experiment also proves decidedly that the South Down sheep are fully as profitable to the grazier as to the farmer.

This experiment is well worth the attention of the reader. I met with it by chance, though it perfectly accords with my own ideas; for there is not the least doubt but small animals, of all descriptions, are the most hardy. Attempting to breed large animals on poor keep must, therefore, be throwing away both time and money; for if the largest of animals were introduced to poor barren soils, to breed from, in two or three generations they would be nearly reduced to the size the soil is

suited for supporting, and it must be expected that
animals would be more unhealthy: but there are
general rules without exceptions, as some of the He
ford and Wilts sheep are larger than the largest Lei
ters. But the Leicesters are the most delicate shee
England, and naturally incapable of bearing hardsh
though they will do much better on dry than on
soils; and there can be no other reason assigned for the
new Leicesters thriving so well during a torment of
years, but the soil being dry. The Dorset, Wilts, &c.
are as different from the new Leicester, as a jack-as
from a race-horse; the great use of the new Leicester
to effect his purpose in a little time, by high feed a
great care; the other two sorts acquire their perfectio
by slavery. Were the race-horse taken to do the wo
of the jack-ass, he would soon cut a poor figure;
would the ass in training: but I should as soon think
training the ass, as of taking one of the best
Leicester sheep to travel four or five miles a day to
food and fold; indeed some of them would require h
the time to do it. However, notwithstanding I have
this work pointed out many faults in the new Leicester
I still retain the opinion, that if the perfection of a she
were merely to produce outside fat, there are no ot
sheep would answer so quickly: but that does not pr
their superior value; as there are flesh and wool
wise wanted.

For this trial the marquis deserves the thanks of
public, although, to me, it is not at all convinci
I know a much more decisive experiment made betw
the Dorset and South Downs, at Lord Shaftsbury's;
twenty ewes of each breed being turned together on
pasture, and, the ram having been put to them, t
were folded the whole of the time, and driven to diffe
distances: the Dorset ewes all made their lambs fat,

their wool sold at 6*d.* a fleece more than that of the South Downs; whilst not one of the latter ewes fattened her lamb;—one was killed on trial, but it was poor; all the others were kept for stores. Further, the South Downs have been tried, by Mr. Bridge, to produce early lambs; which they have done, but would not make them fat, either early or late; though if they yean in March or April, they make their lambs as fat as any other kind. From all the trials that have been made, it plainly appears there are sheep for different purposes: the Dorset ewe is the best of all for early fat lamb, which proves her more valuable than any other sheep; as it frequently happens her offspring produces more money at six or nine months old, than the average of any other breed, the carcase alone, does at two or three years old. It is a very good observation of Mr. Young, of Haughton-house, that if the Dorset ewe were to become extinct, it would very much lower the price of land in Dorsetshire: therefore those persons who are endeavouring to introduce other breeds to the county, are greatly injuring themselves and others. Although there appears to be plants growing in that county that cause the South Down ewe to take the ram at a more early season than in some other situations, she will not fatten her offspring by the time the Dorset ewe does; for when she yeans so early, the lamb is stopped and stunted, and the best of her milk is past before the proper season commences: and the men who suckle calves will give more money for a healthy calf two or three days old, than they will for a calf two or three weeks old if it be in a poor state. The trials made by Lord Shaftsbury and Mr. Bridge are more to be depended upon, than that of the Marquis of Bath, as to the real value of sheep; and more plainly shew the purpose for which they were intended: for the Dorset ewe will fold very

well, if not so well as some others; but the South Dow ewe, if she excel in that, and in her fattening quali loses in another stage a more considerable profit. I a of opinion there is not any other sheep so profitable the Dorset ewe, though probably appropriated to the county only; as I have known the Dorset ewe brou into Yorkshire, where she was not found to answer, Northumberland ewe, put to a Dishley ram, produ a much greater sum of money in one season. I am particularly mention this circumstance, that the reas may not be led to believe I am recommending the Dorset sheep before all others for every situation; although Mr. Bakewell, in all his glory, never produced an ewe that would give equal profit on the fair establishment of shambles meat only; and Mr. Bakewell never erred more in his judgment, than when he argued that his sheep were suited to all situations—an opinion which the Marquis of Bath's experiment clearly invalidates. Indeed, Mr. Bakewell, or any other man, by endeavouring to enforce such an argument, is putting himself in opposition to our all-wise Creator; it is absolutely saying—*Why* did He form so many animals of different descriptions? why did He not rather make one useful for all purposes? The marquis's experiment, so far as folding is of value to the farmer, may afford some information; otherwise, in regard to the fattening quality or consumption of food, as it was not weighed, no just idea can be formed; nor can it be any criterion respecting the greatest increase of flesh, &c. the trial being with only one sheep of a sort, as sheep of the same species do not all thrive alike; and it is very possible to go into the most correct breeder's flock, and, with the best intention, choose a lamb as one of the best, which may not prove so: again, it should be considered, that although the new Leicester's increase is less, according to his first state, than some of

the others, he was taken out of his element; had he been treated as pasture sheep are in Leicestershire, the result might have been contrary;—which makes the old saying good—What is one man's meat is another man's poison.

SECTION XVII.

Housing Sheep.

In reading some authors on sheep, I find the practice of housing highly recommended, particularly for the improvement of wool. Mr. Luccock, in his treatise, p. 127-128, has made some shrewd remarks on this subject: he says, "In counties where the finer wools are produced, some have observed that the shepherds inclose their sheep every night in buildings reared for this purpose, and to this circumstance attribute the superiority of the fleece. Doubtless every attention which contributes to the health and comfort of the animal, tends to improve its pile. But cotes were not erected with this particular view; they were first adopted when the beasts of prey, prowling near the pasture and the building, disturbed and endangered the flock, and are now resorted to chiefly in countries where these animals remain, or have been but lately extirpated: in some others they are made use of from mere habit. The practice of cotting sheep, having been adopted by their forefathers, a few of the present race of shepherds for that reason continue it; while others, who have observed its effects with more attention, have both praised and censured the custom. But to crowd a large number of sheep together in a low, damp, and close building, although the fleece may possibly derive some advantage from the superior quantity of yolk which is furnished, must frequently be

attended with the most pernicious consequences. Sometimes in the course of a single night, hundreds of a flock have been lost by suffocation; and it must always dangerous to turn out the sheep from the steaming prisons, poisonous as the dungeon of Calcutta exposed to the chilliness of the morning air. The animal must derive his blood from the most hardy progenitors, which can endure treatment like this, without suffering a contraction of its pores, and a consequent injury to the wool. The French, observing that cotes of sheep has done harm when injudiciously managed, recommend that the cotes be large and airy, and that the flocks be kept within them until the dew is evaporated from the ground; or, in plainer language, they desire us not to expose the flock to extremes of hot and cold, or to sudden transitions from one to the other." Mr. L. has assigned very good reasons for the first formation and continuance of cotes, but I know a further necessity for the practice under certain circumstances:—when I lived in America we were compelled to house our sheep occasionally during the winter, in consequence of the intensely cold weather. It makes a material difference in that country, where the summers being burning hot, and the winters of an opposite extreme, whilst the short intervals between partake equally of both, animals must necessarily feel the cold in a greater degree; and there being neither grass nor turnips, as there are in England, the sheep are so poorly fed, that an English grazier would be at a loss to conceive how they live. Some persons there who keep sheep have not a sprig of grass, or a pound of hay; nothing but the blades and tops of Indian corn—the corn being rarely given to any sheep but those that are fattening: and as the season for their yeaning is the months of March and April, in the general way, the

same as in England, when the animals are lowered in condition, the weather in America being frequently more severe during those two months than January and February are with us, it is not by choice that they house their sheep, but through necessity. Therefore no criterion can be drawn from other countries; nor ought the English shepherd to require teaching, as to the management of his sheep, by any foreign country, for there are no such profits obtained from a flock of sheep in any other part of the world upon a given space of land. I am much astonished that common sense, even without practice, does not convince men of education that nature has properly clothed all animals to support the vicissitudes of weather in climates suited to their habits and dispositions; at the same time, what an immense expense it would be, to house all the sheep in England, were the practice proper! but those who fatten sheep in the winter, know the evil of putting them under any sort of shelter. I will take a general example from the county of Lincoln, where more sheep are made fat, on natural grass, than in any other county, indeed nearly as many as in all the kingdom besides put together: the chief part are kept on the marshes, where there are only ditch fences for miles, scarcely a tree or bush to be seen; and the sheep pastured on those dreary, bleak places, with difficulty obtain a very small portion of grass during severe frosts and snows, and sometimes continue for months without any feed being allowed them; yet, notwithstanding all these apparent disadvantages, the sheep are often found to be much earlier fat in the spring than others that are pastured in the very same marshes, or frequently on land of better quality, which happen to be sheltered, by being near some building;—as there are in the marshes the remains of old abbies, monasteries, &c. and in such places old walls, and

sometimes trees, under which the sheep lurk in stor
and do not search for food; and it is a general opin
that exercise alone is of service. As there is freque
the very best land in those sheltered pastures, if
winter prove open and fine, the sheep in such pla
will be fat the first; which certainly proves that any
of shelter is injurious to a fat sheep. Respecting thi
can, from my own experience, speak fully.—Wh
first became a grazier on those marshes, there had
a very severe snow: I had the management of
father's flock; and, the ditches being drifted and fro
over, the sheep, as it is termed, *run*, that is, crossed
the ditches; and there being more than five thousand
sheep in one lot, it caused great confusion and loss.
As it is almost impossible but, when such a number are
together, that some will be infected with the scab, it w
proved that winter with our sheep. The next winter I,
by way of trial, made a shelter in one pasture; but,
although the weather was not very severe, I could per-
ceive the shelter to be a real injury to the sheep.
The only service I expected from the shelter was,
that it might cause the sheep to stand their ground.

I have another very strong proof against the practice of housing sheep.—When I lived at Slane, in Ireland, I had, in the flock I bought, three pet ewes, which had been accustomed to go with the cattle, and were constantly pastured with the milch cows; consequently had the best grass in summer, and in the winter the greatest opportunity to fatten of any other sheep in the farm;—as when the cows came up, and were fed in the house, they had access to the lawn; and the barns being near the cow-houses, they used to go in, and eat corn, and also into the *hagger*, among the corn stacks; we likewise generally had turnips in some house in the winter for the bulls, and other cattle, of which they ate

what they liked;—but, notwithstanding all these advantages, they were the poorest ewes on the farm, much poorer than those that were in the same pastures, with only the assistance of grass: no other reason could possibly be assigned, but their occasionally lodging in houses, and at other times being either in the fold-yards or in the haggers.

I have seen many similar instances; and I am clearly convinced, that if a sheep only lie on straw or hay it will be an injury to his thriving: and I am equally certain, that on such grass land as is in quality good enough to keep sheep properly, they will thrive better without than with hay. Even in deep snows, and during stormy weather, notwithstanding hay will preserve sheep alive, it will not fatten them; though it may be necessary to give sheep hay on lands which are naturally too poor to maintain them without. I have even reason to believe, that if a sheep were regularly put to turnips in the day time, and brought into a house to lie at night, he would be found poor. When sheep lie on straw or hay, their wool heats, which causes more yolk to rise into the wool than nature requires, or what may be termed *soaking;* and, as Mr. Luccock observes, whatever injures their health must injure the fleece. Had my whole flock in Ireland been housed, as those three ewes were, the pile of wool would scarcely have been saleable. I am of opinion a fat sheep in the spring was never known to eat meadow hay; in the winter, red clover hay, I believe, sheep may eat. I have had occasion, when I was shepherd to my father, to put an ewe in the house, in a stormy night, during great snows or cold rains, when she yeaned late, or was ready to yean, by way of saving the lamb; the result always was, the ewe lost blood, and did not thrive as she ought for some time afterwards,

while at shearing the fleece might be known by being a much inferior quality, and generally jointed.

But nothing except practice would make many believe that the housing of sheep could have so injurious an effect upon them. It is contrary to the nature of most animals to be kept in houses, especially such as are which are provided with a covering that suffers neither wet nor cold to reach the skin; and therefore, as Mr. Luccock observes, the hot-house causes them to perspire, and the pores of the skin being opened, they are apt to take cold. Even in the summer season, I have recommended the housing sheep a night or two before shearing; which, by giving the wool a softness, and making the yolk rise, adds to its weight, and renders it somewhat better fitted for the manufacturer; but even that proceeding generally injures the health of the sheep, as I have observed them to discharge mucus at the nose, and some of them to go blind, especially if the weather became wet immediately after their being shorn, which has very frequently happened.

The same author whom I have mentioned as recommending housing sheep, quotes an instance of the celebrated Mr. Howard's—what he terms—cruelty to his milch cow. I suppose he more particularly mentions this circumstance, because Mr. H. appeared, from his singular turn of mind, in visiting prisons, &c. to be possessed of great humanity.—When the cow had calved, his servant man took her into the house, and was going to give her a pail of warm water; but Mr. H. ordered the man to turn her out, and let her drink cold water—which, so far from being an act of cruelty was a mark of Mr. H.'s kindness, as well as good sense. But this writer, not being acquainted with the nature of cows, would be pardonable, if he did not attempt

direct; for there is not any thing so bad as warm water can be given to a cow: it is always highly improper, but to a cow in that state it has been instant death, by occasioning profuse perspiration. Notwithstanding the wool of sheep prevents so visible a sweating, yet the place where they are housed will be filled with steam or vapour; which shews the propriety of Mr. Luccock's comparison of the practice with the confinement of the unfortunate Englishmen in the black-hole of Calcutta. But, in all the modes of housing sheep, stall-feeding, &c. the best criterion that I can point out, is, to observe the difference in appearance of animals so treated. Confinement is well known to be injurious to animal health; which is strikingly proved in the very different appearance of the mechanic and the ploughman: even the farmer, who thinks he is careful of himself, and takes the benefit of exercise by riding about, is not in general so healthy as his labourers, who are constantly exposed to every variety of weather. I have seen many poor flocks of housed sheep, but I never saw a fat one; and I must, therefore, conclude with condemning the practice, and in perfectly agreeing with Mr. Luccock as to its origin.

Folding is another bad proceeding which has arisen from custom. Most of the sheep grounds were formerly open, when there were two sufficient reasons for folding; —one was, securing the flock from straying in the night. To this day bells are fastened on the necks of particular sheep; but, as the shepherds are continually with the flock, I doubted the necessity for so doing: the answer given was, that in the night-time, if dogs get among the sheep, the bells make a rattling, which brings the shepherds to their assistance; and I was also informed that the lives of many sheep are saved by these bells: add to which, as the shepherds know where their own sheep are when folded, which would not be the case if they were

SECTION XVIII.

Food.—Pasturing Sheep, and treating them in the most profitable Manner, in every Situation.

It appears from the several reports, including those I have myself had the honour to make, that in different parts of this kingdom they have a method of keeping the whole of the flock in one lot in some pasture for a small space of time, and then moving them to another; by this means, sheep are always in motion, which is contrary to their nature. If a number of sheep be put even on a large common, and not disturbed by dogs, or harassed by shepherds, they would form colonies for themselves, and be found on separate spots, nearly the same every morning. Sheep, when first put in the pasture, as it were survey the place, by going round it, before they settle to eat; which shews that they, like the bee, are in search of a home: and a large number of sheep put in a small space, knowing by instinct they cannot remain there long, will immediately feel themselves uncomfortable, and, by their ranging, greatly injure the grass, rendering it, if a wet time, unwholesome food. All discerning men will allow, that stock kept on the soils where they were bred are the most healthy; and it may often be seen, there are many different soils even in the same parish, which I know from my own experience. My father, on the farm which he occupied in the county of Lincoln, was accustomed to put his year-old ewes into a certain pasture, his two-year-olds into another, and so on, moving them once a year, until they were all draped or put up to fatten: seeing those ewes were much dissatisfied at being taken from the old pasture, and made every effort to get back again, I requested my father to let them remain in one place for the whole of the time

they were continued as breeding ewes; he grante
desire, and we found them more healthy, and to
much better in consequence: for during the time of
uneasiness in the new pasture, they were on the sh
and if for only ten or fourteen days, they required, i
probability, the same space of time, or one twelfth
year, to recover. But what must those poor an
feel, that never find a home? In confirmation
above reasoning, if the reader will look into the
reports of the different counties, he will find that n
county of Lincoln, where it is the custom for the
ziers to buy in their sheep at one year and two year
and to put such a number, if two-year-olds, into a pa
as the land will keep—which is, on the best, about fou
one ox to the acre during summer, and in winter
sheep, or two and a quarter or half—the sheep are a
and sold off before the month of May, when the pa
is ready to receive a fresh stock. But, notwithsta
the land in Lincolnshire is rather better than that of
other counties, it is not so superior, taken general
nearly to carry a double stock, which Mr. Young
among other information, stated as the fact, by g
100 stone an acre to be sent off in a year;
in several counties—Rutlandshire, &c.—the highes
duce given is but about 50 stone an acre; in
about 70 stone. Nevertheless, I can vouch for t
curacy of Mr. Young's statement, if confined to
cular portions; as I know one piece of land mea
very well, at Boston, occupied by Thomas Fydell
on which he always put nineteen as large oxen
could buy in Boston fair, and 100 of the largest an
sheep; (the fair is held on the 4th of May): i
oxen be averaged at 85 stone each, and, as the sto
sheep is four to the acre from the time of the f
Michaelmas, which is five months, supposing th

during the summer and winter to make three of them fat, averaging them at 25 lb a quarter, or 100 lb a carcase, that will be 300 lb, or 21 st. 6 lb an acre, in all 106 st. 6 lb in beef and mutton. This is in the south marsh:—the pasture is said to be large measure; if it be, there is a surplus of flesh to make up for the excess. But my father had a piece of land of only seven acres and a half, on which he used to keep seven large oxen, some of them weighing 90 stone and upwards—I will average them at 85 stone—and two and a half sheep, an acre, to be fattened in one whole year; this, considering each sheep's carcase to weigh 300 lb, would be 106 st. 6 lb: the piece of land was statute measure; therefore, allowing the half acre over the seven, the produce will be something more than 100 stone an acre, 14 lb to the stone:—and this was at Salfleetby, commonly called Soleby, in the north marshes. Now, if those graziers, with some hundreds of sheep in one lot, were to have them driven from pasture to pasture, covering the same space of land they do at present, I am certain they would not in the spring have a single fat sheep. Those authors who state that sheep like to rove, are decidedly wrong; the fattest sheep are ever found on the same kind of land, when in lots of about four in number to two acres. It is well known that land divided into small portions will frequently make more fat sheep or cattle, in proportion, than larger pastures: the reason of which is obvious; as four or five sheep on two acres of land do not tread and injure the grass so much as 300 would on 150 acres: neither have they so much trouble in collecting their food, nor do they, in their resting-place, destroy so great a proportion of the pasture; whilst their dung is deposited more to advantage, for the improvement of any given space of land. This may be seen in my report of the county of Bucks, where, in Mr. Westcar's farm,

not keep, as a regular stock, more than twenty, or two sheep an acre as a standing stock, when it springs up again is never of a quality that any animal likes, until sweetened by the frost; while, from the irregularity of their food—one day at high feed, then on middling, two or three days on the waste, and afterwards starving—the sheep are sure to be very unhealthy, and much more loss must ensue :—(this will be more fully explained in the section on disorders).

It is very common in those marshes, during the spring months, for some of the middling sort of land to keep ten store sheep an acre, for eight or ten weeks: authors have taken the average, in some of those marshes, at seven to the acre. I have every reason to believe, if a trial were made by any grazier, in those marshes, who has 1000 sheep or more, to keep them in one or two flocks, and pasture them, that by having dogs and shepherds continually among them as tormenters, and folding them at night, or even if not so cruel as to fold them, half the number that is now kept, and made fat, would be almost starved. From the different opportunities I have had, in my excursions, as surveyor to the Board of Agriculture, I am enabled to judge very nearly what number of sheep might be maintained in those counties where they now keep dogs and men or boys to continually worry them;—for they are all the day, through fear of the dogs, as near together as if they were in a fold, running in a body from one blade of grass to another, which causes them to be incessantly in action. It may be seen, that when sheep feed as nature directs, they will in the day-time be dispersed all over the pasture, some of them laid down to rest; and in the summer, during the night, separated in the same manner: in a morning very early, when, by instinct, they know it will be a hot day, they will leave their beds, and be

grazing long before sun-rise; so likewise if a rainy d be coming on: which is the reason why shepherds are good judges of the weather. This is all by way of ge ting their feed without being exposed to either of the extremes; therefore, the practice of folding, and keepi numbers of sheep in one flock, with shepherds to attend them, being a contradiction to nature, must necessarily be very wrong. I suppose these improper proceedings still prevail from custom, which arose when fields were open; at which period, from want of division fences, the sheep, if not attended by shepherds, would have de stroyed the crops of corn: it is, at the same time, an idle, slothful way, of the shepherds' spending the time; for if the sheep were dispersed in *the* separate pastures, as they ought to be, the shepherds would have more work, by having to traverse over every pasture: but since inclosures have been formed, there is little excuse for such management, and, therefore, it should be dis continued. There may be some common fields, and open downs, where no better practice can be followed than folding, &c. but it is unpardonable in inclosures which I have seen much practised.

It may be amusing, and interesting to some readers to give a few further ideas of what number of sheep may be expected to be kept on an acre of land of a west nature, such as is termed breeding land.—On moderate good ewe land, two ewes and lambs, or three bog may be kept all the summer on an acre, and a sto beast to from four to six acres, according to the size the cattle and the quality of the land: on artificial pas tures (meaning seeds), on moderately good soil of a con vertible nature, from three to five ewes and lambs may be kept from the middle of April, or in some situation from the 1st of May till the latter end of June, when the lambs may be taken from the ewes, and the latter s

fered to remain until Michaelmas: clover stubble, once mown, will generally keep ten lambs on an acre for six or sometimes eight weeks. Turnips, if a good crop, and properly managed, of a dry layer, ought to keep twenty sheep an acre from November till May; but to effect this, there must be two flocks, one before the other. More sheep may be thus maintained, and much better, than by some other methods; as by folding the fattening sheep on the turnips first, and the store sheep following, both flocks are more regularly kept, and are more healthy; for the first flock living, as it were, always at high table, will not, when put on a fresh fold, over-gorge themselves. When sheep are put on fresh and better folds, they naturally eat so voraciously, as frequently to cause the resp or red-water; but by turning on store sheep to the turnips which the fattening sheep have left, this evil is avoided: more sheep are also kept per acre, and with greater success in every respect. The store sheep, not having been used to the better sort of turnips, will eat up all the refuse, and inferior kind; there being a great difference in the quality of turnips even in the same field, some being much more grateful to the sheep than others, and more fattening.

Many trials have been made to fatten sheep by carrying the turnips off the land, and giving them to the sheep on grass land; but they have not been found to answer. Turnips, when fast in the ground, are in a better position, and of course firm to the bite of the sheep; they are thus nearly scooped out before they are dragged, and given to the in-coming store sheep. By the turnips being thrown into a cart promiscuously, they are all daubed with dirt, and are by no means so fresh and pleasant to the sheep as they are while growing in the field; and a grazier, or feeder, cannot attend too minutely to such circumstances. Another reason why

turnips carted off the land do not answer so well, as
when spread on grass land, the sheep have seldom a
supply until every turnip is eaten up; and, although
may appear to be no difference in the turnips, th
which the sheep refuse it is certain are not of a fatte
quality, but hunger obliges the sheep to eat them.
therefore, obvious that fattening sheep ought not
kept in this manner, but should be followed by
as thus a very great waste of both time and
avoided, and both flocks kept much better: for it is
ble that during the time the fattening flock are
upon what they at first refused, they are upon the
consequently the refuse had even better be wasted
tirely, than thus managed. In fact, where the
of folding is pursued with but one flock, great
committed; for a custom prevails, among the
managers in that way, as soon as the first fold of
is eaten low, and the best part of them picked
giving a fresh fold to the sheep: when this
is eaten down similar to the former, the
remained in the first fold are dragged up,
come during that time, they are frequently all
spoiled; if not, the sheep will then return,
small portion of these draggings seemingly in
to the remains of the second fold. With but
and one fold, it is impossible to make the most
crop of turnips: for before the whole can be
with one fold, the ground will be absolutely
and a fattening sheep, under those circumstances,
not take a proper quantity of such refuse food
him in a progressive state of improvement. I
whether, when fattening sheep are held to
they are surfeited, they do not continue in a
cline all the time; and I am persuaded, from
and observation, that nearly half as many more

may be kept on a good crop of turnips with two folds than with one fold.

As this is a somewhat new doctrine, it may be necessary to elucidate it more clearly; ten sheep an acre having been thought a good number, and which, until lately, was my own opinion. When I lived in Ireland, I kept full twenty sheep on the English acre, from the first week in December till the second week in May; about half heeder hogs, which were made fat, and all killed for shambles meat, averaging about 80 lb a carcase. The stores were about half sheeder hogs, the rest ewes in lamb: the stores in excellent condition, and proved so healthy, that I lost but one, which was killed, and sold at 3*d.* per pound, weighing 14 lb a quarter;—this was a sheeder hog, that went in the last fold, and, consequently, but little loss: the carcase made 14*s.*, the skin 4*s.*, the loose fat 1*s.* 6*d.*, the head and pluck 1*s.*; in all 20*s.* 6*d.* Some turnip graziers are of opinion, that it is conducive to health to give hay to sheep at turnips; but on this land not a blade of hay was given, or any other food besides the turnips, rape, &c. which grew on the ground; about three fourths of the crop being very full (I never saw a better), and one quarter about three fourths of a full crop. This altogether being rather extraordinary, it may not be amiss to give the weight of a full crop of turnips, from a very correct account in Mr. Curwin's treatise; by which it appears that an acre, being weighed, produced upwards of 40 tons. From the experiment tried in Ireland between the new Leicester sheep and the very large Irish, it may be seen that the Irish sheep consumed, on the average, for seventy-five days (the greatest consumption being by the Irish sheep), 22lb 12 oz. a day: but as hay was given, it must be taken to account; and the average of the hay being near 3½ lb daily, if we add the weight in turnips it will give 26 lb

of turnips to keep a large sheep one day. The number of days from the first week in December to first week in May being 151, the gross consumption each sheep, at 26 lb daily, will be 1 ton 15 cwt.: two times that weight will be 35 tons; consequently there remain for waste 5 tons. By these correct accounts reader will find, that the management of the turnip through the various stages, is capable of much improvement. This I was led to discover by the above experiment of Mr. Grierson's—keeping those two sheep turnips, and constantly weighing them: when I knew what one sheep ate daily, seeing my crop a very good one, I weighed a yard square, and I found it contained 20lb, without the tops; thus I calculated there were about 43 tons an acre, which encouraged me to put so heavy a stock on the turnips at the first, in opposition to my shepherd (he was from England, and had lived with Mr Chaplin, the celebrated Mr. Grant, and some other turnip graziers), who was sure I had put on too many sheep by the half, as he reckoned only ten to the acre. Therefore, by pursuing this method of managing turnips, it is evidently to be brought to a system. I have known some breeders and turnip graziers, for want of such calculation have many more turnips in the spring than they could consume; whence an entire loss has ensued, both in regard to keep and the injury done to the land they grew upon:—the manure is lost by not having sheep to convert the turnips into dung and urine, they have the turnips lead off into some ditch or hedge bottom, while they have perhaps several hungry sheep that would have been much benefited by feeding upon them during the winter.

Lintseed cake is another excellent winter food for sheep:—a sheep will consume, even when on grass land (though he will eat but little grass when cake is given), about 1½ lb a day. Oats are sometimes used

it is customary to allow one pint to each store sheep; but we will, to give them sufficient to fatten, take the allowance at a quart. This being granted, it may be useful information to readers to see, at one view, the difference in expense between them, lintseed cake, and cole-seed—a most excellent food for fattening sheep—supposing a good acre of cole to fatten ten sheep.

Expenses in keeping Sheep one Day on different Food.

Turnips.—Considering an acre to be worth 6*l.* 5*s.*, the cost of one sheep will be 1*d.* a day.

Lintseed cake.—Taking the price per ton at 20*l.*, it will be about 2*d.* a pound; therefore, if the sheep eat 1¾ lb, it will be 3½*d.* a day.

Oats.—Allowing a sheep to eat 1 quart daily, and the bushel to be worth 5*s.* 3*d.*, the expense will be about 2*d.* a day.

Cole-seed.—Considering the crop on an acre to keep half the number that turnips do, it will be worth half the price, consequently the cost will be about 1*d.* a day.

From these calculations it appears, that a sheep fattened on turnips costs, for 151 days, supposing him to take that time on the average, 12*s.* 6*d.*: on lintseed cake, for 151 days, averaging the time as above, the expense will be 2*l.* 4*s.* 0½*d.*: and on oats, for 151 days, taking the same average, he will cost 1*l.* 5*s.* 2*d.*

Thus it is clear, considering the different prices of food, and the time and quantity a sheep requires, that sheep will not pay the grazier so well by being fattened on any artificial food, as when fattened on turnips and cole-seed.

SECTION XIX.

Method of managing Sheep at Turnips to the great Advantage.

For this purpose the fold ought to be calculated to keep the first flock at least fourteen days, before they are ready to drag; and the refuse afterwards sufficient to support an equal number of the following flock in the same space of time. It is evident to me, there are many turnips in every field not of a fattening nature though not visible to the eye of man; for, by observing both flocks, it will be seen that the first flock will almost entirely scoop some, and reject others;—but it is very seldom that a large turnip is refused: when the store or after-flock is let on, and the turnips are dragged, those that were the choice of the first flock, will be equally the same with the second; and although there appears little left but the outward rind, the store sheep will eat every bit of them before they will touch those that were left whole by the first flock. I have many times, out of curiosity, pared one of the whole turnips, some of them being of a moderate size, and tasted it; but I could very seldom perceive any thing particularly disagreeable in the flavour, though it was generally much harder than those the sheep selected: I am of opinion the refuse turnips, which are commonly smaller, have been unhealthy plants through every stage, and the sheep by instinct know it. My attention was first directed to this circumstance by a Yorkshire jobber, who, and his father before him, had been in the practice of fattening many sheep on turnips during winter he said, he had rather have a crop of large turnips at a fair price, than use a crop of small turnips given.

have found from experience his observation to be well founded, as large turnips fatten sheep much quicker than small ones; which is one principal reason why two folds are necessary, as it is plain to me, where sheep are kept on turnips in a single flock there is much unnecessary waste committed, and that in many fields of turnips there are numbers of an inferior quality, which, if the sheep have a sufficient quantity to fill his belly, would not fatten him. It is very common to hear farmers say, their sheep have done very ill at turnips during the winter, without having the least idea of the cause, for it is an almost general opinion with turnip growers, that two small turnips are better than a large one. Now the question is, What are the respective sizes meant? If the latter weigh 20 lb or upwards, it would probably be too large to be profitable; turnips of that size are very liable to rot during the winter, and must occupy a great space of ground, there being perhaps not more than one in a yard square, as the top of such a turnip must be very large, to produce a turnip of that weight: but it is a doubt with me whether, so long as such turnips continue to be good, a given quantity of land covered with them would not fatten more sheep in the same time than turnips of moderate size: as to small turnips, I am thoroughly convinced it seldom if ever happens they will fatten sheep. In confirmation of this remark, the reader may observe, if a flock of sheep by chance break into a field of turnips, where they can take their choice, they will have uniformly bitten the largest turnips on the spot: so likewise in a fresh fold; and even hares do the same.

I do not mean to recommend that turnips should average the weight of 20lb each, for several reasons. If it were possible to obtain a crop of turnips of that size, it would be injurious to the land, by the space be

new "EXPERIENCED FARMER," vol. I, page 122 to 424. The difference in not producing turnips of a fattening quality, and managing the flock properly, is very material; indeed, it is scarcely to be estimated, for more reasons than merely making the sheep fat: though if a sheep is fit for the shambles sooner in the season than some other turnip sheep are, he may be driven to market when the price of mutton is at the highest, and 1*d.* a pound gained, which is 8*s.* 4*d.* on a carcase of 100lb weight: the whole cost of keep for the winter is but 12*s.* 6*d.*: thus this management often occasions the difference of a poor and a rich farmer.

Those persons who have not store stock to follow, cannot do better than by giving folds amply to supply the sheep for at least fourteen days before the turnips are ready to drag; then others that will keep them about seven days: the first fold may then be dragged; and this proceeding continued during the winter. But great loss of turnips will be thus occasioned; and the fat sheep while eating the dragged turnips will probably suffer more loss in their progress than such keep is worth.

Some farmers and breeders, by way of saving turnips, as they think, manage their sheep diametrically opposite to the method above prescribed, by giving them only a small piece daily; others drag the turnips up before they let the sheep upon them. By such means—similar to a bad cook—their meat is all spoiled in preparing; for when sheep are put on so small a space, what with their treading, their dung, and their urine, the spot stinks in a very short time, and the turnips are so dirtied that they never have a comfortable meal. I have tried that experiment many years since, when I lived with my father at Aby Grange, where the land was a very sour, strong clay, of a poorish quality. On eighteen acres of land, half of it being clover ley, I sowed one part with

wheat, the other with beans: the portion sow
wheat was much more infested with couch gra
that sown with beans; I therefore expected th
sown with beans to produce the best crop, it
much less working, and appearing to the eye, a
thought, in the best condition: but, to my great
the land that had been wheat produced full doub
weight of turnips. I had not then the least know
of the cause; but which I have since learned—
ploughings were the same on both portions, bu
harrowing was very different; by the latter proce
mould got better mixed and more trodden, and
couch grass and refuse were burnt, which is of
finite service to land: it was all manured with *long-fol*
dung, sown with the same seed, and hoed alike: the
result was, the fly pestered the part on which the beans
grew much more than the other, the turnips having
cockled, savoy leaf; while on the other part, that ha
been sown with wheat, the turnips had a clear leaf, th
land evidently being in better health. I have alway
found that better crops of turnips grow after wheat than
after any other crop. When I came to eat the crop off,
there fell much wet, and the turnips being so heavy on
the wheat ground, by keeping the sheep long on one
spot, they poached the land very much; and the hog
wool being long, with large collars—which were admire
at that time, by giving a considerable weight of wool o
the neck and about the shoulders, and is even now
perfection, although Mr. Bakewell and some others ha
reprobated it—it hung so low that the clay stuck to
so as to gather into large lumps or balls, which, wit
their own weight, they were unable to carry, and w
had many of them to relieve from this dirt every da
This was attended with much trouble, when I hit upo
an expedient I thought would obviate it, by putting

sheep into a twenty-five acres meadow of old tough sward, and carting the turnips to them: our custom was, to draw oxen for such purposes; and they, being large, with the weight of the carts and turnips, made such a quagmire of the land, that I was defeated in this scheme. I then got two asses, with hampers, and carried the turnips, which answered the purpose well; and it seemed to me that turnips from a given space of ground would thus keep full double the number of sheep. But the consequence was, that although the sheep ate or consumed less, I soon discovered they were on the shrink, notwithstanding they were served every morning, or in the forenoon, very regularly, and had every day more turnips than were eaten; which convinced me that this method would not answer. This embarrassed me; and I was compelled to let the sheep eat the turnips on the land, as their well-doing was of more consequence than the saving of either keep or expense. I then still suffered the sheep go into the meadow to lodge, or as they liked, and moved the hurdles every morning, dragging up the turnips before the sheep were let upon them: in this way they succeeded better than by carting, &c. but they did not answer so well as before, when they had a fold given them to serve about seven days, which was our custom at that time. All these methods were wrong: had we, on such dirty land, given them a space of ground that would have served them a month, it would have been the means of the sheep doing much better, and committing less waste; as the sheep would not have had to pasture so near together, and during the space of time there would probably have been days when the land would have dried. In the stupid way we then managed the turnips, the sheep never had them in perfection; and pinning them up on so small spaces was like making

mortar, or puddling clay for mud walls, which we can easily have conceived: the ill effects of this mistaken management extended much farther, for by treading the land when in so wet a state, it was rendered completely tenacious, and when dried in the spring it set like a brick, and has thereby often prevented the growth of a good crop. There are many sheep graziers, at this day, who give their sheep a small piece of turnips even in spring, even on dry land; by which the sheep are kept at rest, always craving for more: it seems, indeed, as if sheep so treated were to live more by the smell of the turnips than by the taste. The dirtier the land is, so much larger should be the space of ground given at one time.

The reader, by attention to this work, will be in full possession of the proportional weight of turnips a sheep eats in one day, and the space of ground required to afford that quantity. One sheep, to have his full, it appears, from calculation, will eat from 22 to 25 daily; but I have some doubt whether a sheep will consume a less weight of turnips when he eats hay; however, I apprehend it will be found that 22lb is about the average: thus a sheep, on a full crop of turnips, will eat one yard square, or, on some moderately good crop, one and a half. If a man wishes his sheep to do best on turnips, I am of opinion that letting them have their fill continually is economical; as I have tried numerous experiments in feeding many kinds of animals, and I find that when first put up to fatten, for a few weeks or days, according to their nature and the time they take fattening, an ox or cow will decline in flesh about one twelfth in a month, a sheep the same in about fourteen days, &c. I do not think there is any saving in being sparing of food; a man may keep an animal alive with half the quantity that nature requires

support him, but let him be in what stage he may, either growing or fattening, he will not pay with such management.

During the time I lived in Ireland, four of us had, I may say, a trial of skill in the management of turnips; which, as it will convey much information on a subject that, in many parts of the kingdom, requires elucidation, I shall here, without further apology, state the result.—My being an author, and from England, caused great emulation among the neighbouring gentleman farmers; and, although turnips are very little grown in that country, three capital sheep graziers determined to raise them. One of these gentlemen was a nephew of Mr. Coke of Norfolk, and had long resided in that county: some part of the breed of his sheep was immediately from Mr. Coke's new Leicesters, some from Lord Talbot, and a portion from Mr. Ashley. Another was a grazier and ram breeder of great repute, of the best Irish breed; with some crosses from England. The other of my rivals was a grazier who bought his sheep at Balinasloe fair, of the best two-year old fat wethers. The crops of turnips all proved very good; but their method of fattening sheep on this crop varied greatly from mine. Hay being much used, as the winter food for sheep, in Ireland, all gave it but me; and as in that country they have not the smallest idea of the cause of the rot in sheep, it was the general opinion that mine would all die of that disease, as they suppose it to be occasioned by dirt in grass and other food: it was even rumoured all over the country that my sheep were dying by numbers daily of that disorder. The gentleman, nephew to Mr. Coke, folded his fine new Leicesters in small folds, fresh two or three times a week, which he fancied the best mode of proceeding: the ram breeder had some remarkably fine fat wethers,

which he put on an eddish, with a hay-stack t carting the turnips to them: the grazier, with his wethers bought at Balinasloe, carted his turn then washed them, giving likewise hay, potatoe and corn. The result was, with all their a advantages over me—my sheep being only ha old at the time they were put to fatten, and th had bred them from the culls or drapes of t flocks, the rams nearly the same, it being a November when I entered Ireland—that, there general show at Naven, the last week in A prizes, I took six of my year-old sheep, not q prime, as I had before sold forty of them at twelve of which the butcher had to kill; Mr. nephew took six ram hogs, of his fine new Leicester ram breeder six of his famous fat wethers, which completely fat when put to turnips; the other six of his well-chosen pampered wethers; and, this, as they thought, better management tha my sheep were so superior as to excite th nishment of the by-standers, who thought surprising that they should so much excel the especially those belonging to the grazier, whi been fed, in addition to the washed turnips, wit bran, potatoes, and hay, while my sheep had but turnips, and them, as they had seen, and very wrong, in the dirt.

If this experiment had been tried purposely, not have been made more decisive; as the sheep good, except mine, and each gentleman, I have say, in his mode, managed well. As to the kinds o Mr. Coke's nephew obtained his seed from Nort his ram hogs had had Swedes during the last s which are allowed to be the most fattening, esp

the spring: the ram breeder had his seed of me, sowing it at the same time; and his land was of a much better quality than mine.

I have great reason, from my own trials of feeding turnips off to the most advantage, to extol large folds, as recommended above, and to decry small ones, or any penurious management in the fattening of animals;—filling their bellies one day, and starving them another, is being pennywise and pound foolish. That giving hay to sheep should prevent their becoming fat, is to me incomprehensible: the carting of turnips on grass-land was the same at the time of my first disappointment, though now it appears more plain; they certainly do not eat the weight when carted as they waste or consume on the land: whether, from their rolling state on the sward, they do not fill their bellies, or they do not like the turnips so well as to eat enough to benefit by them, or if they were allowed to commit much waste they would fatten, I do not know; but I am very sensible there is no way of making the best use of a crop of turnips but by feeding them off with sheep, and that with two flocks.

There is an additional charge attending the carting of turnips, besides all the other matters which I have pointed out. I observed at Slane; when Lord Conyngham and I dissolved partnership, that the agents appointed set off to cart the turnips on sward land, at an expense of about *5l.* an acre, while the sheep got poorer and lost flesh by the proceeding: and I doubt whether a good crop of turnips can be carted, to any distance, for much less. This is a consideration worth notice: add to which, when sheep are put in small folds, moving the hurdles every day breaks them much, and a very great expense is thereby incurred.

Cabbages are an extraordinarily good winter fo sheep: the best method of managing them is, them off, otherwise sheep make great waste. found sheep to fatten on them thus very well, eq letting them eat them on the ground they grew and if cabbages could be raised to weigh 20 upwards on a yard square, they, on clay lands be preferable, as they are more fattening than and the carting not so expensive.

Tares are a summer food for sheep: I hav them not very fattening; though store sheep kept upon them in moderate health and conditio are valued at from 2*l.* to 3*l.* an acre. But i counties where I have seen them the most ge used, they let the sheep eat them on the la giving them a small space, not much larger, time, than they can stand upon: thus there is o or nearly, trodden to the ground; which I thin than waste, as the refuse is ploughed in, occ the land to be light, and is one cause of the fa saying they never have a good crop after tares. fore I should prefer mowing them, and giving cribs, carrying all the refuse stuff off. The of sheep kept on an acre of good tares is one for a week, which is about seven yards square sheep daily, or forty-nine per week; but thi pears to me there must be great waste co for if the same weight of tares as of other satisfy a sheep's hunger, seven yards must gr than 26lb., which, as we have already seen, is quantity a sheep consumes daily.

SECTION XX.

Disorders incident to Sheep, with the Methods of Cure.

Red-water, or *Resp.*—This disorder arises from sheep over-gorging themselves with any kind of succulent food, such as turnips, cole-seed, clovers, fresh eddish, &c. It is always much better to prevent than to cure; and this disease may generally be obviated by attending to the following cautions. When sheep are first taken to any of the above-mentioned foods, it is advisable to put them on in a morning. It is the opinion of many persons who fold sheep, that after the dew is off the ground there is no danger; which may be in some degree true, though I have never found it of any consequence. The sheep should be brought from such food about twelve or one o'clock in the day, and put where there is nothing to eat; and in the evening about six o'clock, and again at night about ten, they should be raised up, and forced to move about, so that they may be obliged to ease themselves of both urine and dung, as the disorder is caused by their lying down in a quiet state while their intestines are over-loaded. It may be observed, that sheep dying of this disorder are generally found dead in the morning; and this I have frequently experienced when there has been much rime, when I could perceive that the sheep had never moved from the spot during the night, and seemed to have died in their sleep. When opened, there is a sort of bloody water found in the sheep's body, among, and generally some in, the intestines; I have taken out of one sheep three gallons and upwards: this water seems putrid, the entrails are commonly so tender that the fingers will run through any part of them, and a general mortification appears to have taken place; for not only

the bowels are offensive, but the flesh and skin seem affected. The cause seems evident:—sheep, after a such food as turnips, cole-seed, &c. which cause them to void much urine, by being unusually full, or more than they ought to be, sleep soundly; while the se particles, that ought to go off by urine and perspira remain in the bowels, and, for want of exercise, stomach and intestines being in a tender state are through: when that effect has taken place, there cure. But I have this to observe, since I discovered nature of the disorder, I have seldom lost a sh though before I adopted the following measures I hundreds. When I have any sheep on such foo above mentioned, I take care, for the *first three or* days, to have some convenient place to put them about the middle of the day, having them m about for exercise at four o'clock, at night about and again in the morning about four o'clock.

To strengthen my own opinion and success, wh was on the Downs near Brighton, I conversed wit shepherds at different times respecting their sheep, a them what disorders they were liable to: they told me Downs were very healthy, except when brought fro to high keep (such as from the short grass of the D to rapes), for then many in a flock had been ki by over-gorging themselves, to die in one night; t fore they had found it expedient to let the sheep upon rapes for only about two hours the first day so to keep increasing, by degrees, until they were to the food. This shews plainly the cause of the dis and the great necessity for caution.

In my own practice, I have had some rather ordinary instances.—I had twelve acres of clove which were one hundred ewes and lambs: this fiel intended to be sown with turnips, but the weather

dry, I could not plough it. In order to be ready against rain, should any fall, I had the manure carted on the land. A twenty-four hours' rain fell, and on the morning following there were three ewes dead of the red-water, though both ewes and lambs had been constantly pastured there before for some weeks without a single accident. It may be necessary to observe, that the manure had been previously taken out of the fold-yard, and consisted of rich horse-dung, cow-dung, pig-dung, &c.: it was laid in lumps or heaps on the ridges, and the rain had drained regularly from the ridge to the furrows, so that the black-water stood in puddles. I have had similar accidents happen on grass land that has been highly dunged. Before I became acquainted with the nature of the disorder, I thought there was something unwholesome or poisonous in the black-water, which is erroneous: it appears plainly from the accident of the ewes dying on the clover, as the pasture was not so abundant that they could readily over-gorge themselves, that a quantity of the black-water, in its passage over the clover plants, having been left upon the leaves of the clover, the heat of the stomach had caused it to ferment, and the parts or intestines which contained the food were thereby made tender, so that the stomach, &c. speedily became putrified, and instantaneously affected the whole frame; for common reason will shew, that when the stomach is so inflamed as to be in a state of mortification, the blood, which derives its origin from the stomach, will necessarily in every part become the same. As a corroboration of this opinion I have observed, on opening a sheep which has died of this disorder (it being expedient, to save the mutton, to take out the entrails the instant the sheep is found), that the inside was so hot I could scarcely bear my hand in it, reeking like boiling water. Thus it is evident that the

violent fermentation, and consequent heat, cause t stomach to expand; and the red-water increasing in quently to from two to three gallons, is forced throu the pores of the skin, and dispersed in the body, ther occasioning almost immediate death. For the abo reasons, there is but little hope of effecting a cure wh the disorder is confirmed; but as I imagine it sometim happens that the overloading of the stomach may be gathering for a day or two before the apparent attac it seems reasonable that any means which can be appli to cause the sheep to readily get quit of the then co lected vegetable matter in the bowels—for it is vegetabl matter of a succulent nature only that will *bring on* th complaint—must be beneficial. I have *known* shee over-gorge themselves by eating beans, peas, and oats until they have actually vomitted them up; but I neve knew a sheep from eating dry food affected with th disease. The remedy, therefore, to be sought is, t promote a quick discharge; and a medicine is require to which recourse may be had if one sheep in a flo happen to die of the disorder, which will seldom be th case if the above cautions be observed. When I live with my father, his medicine was, a quart of tar put i about two gallons of water, letting it stand for twel hours; and in the morning very early, on an empt stomach, he gave each sheep about three tablespoon ful: this we have sometimes thought has been service. But our ideas then were ill founded, as we e pected the medicine to be a cure, or preventive, for whole season; the best effect that can be expected ca only be a few days' safety. I have found the followin physic the most effectual:—Put a pint of salt to one qua of chamberlie, let it be well stirred, until the salt entirely dissolved, and give each sheep about half pint early in the morning. The salt causing the she

to drink much, they ought to be where there is plenty of water; as the water they drink, with the exercise, causes the medicine to operate more powerfully: and if about a tablespoonful of soot be added to each sheep's dose, the better. This medicine will be found serviceable in almost all disorders. The best mode of giving it is, having the horn of a beast, fully large enough to hold one third more than the dose, with a hole bored in the small end, set the sheep on his haunches, his head being erect, and put the horn in at one side of his mouth, one man holding the sheep in that position, while another man, having the proper quantity in any small vessel, pours the medicine down the horn into the sheep's mouth.——This will be found a particularly good medicine when ewes are doing ill in yeaning, arising generally from costiveness, which causes a fever, and thereby occasions their death. It is a common observation with shepherds, that ewes yean with the most ease in a wet rainy season; the reason is, their food is then moist, and their dung consequently loose, and voided with facility. But, in nearly all disorders, keeping the body open is the main spring to the cure.

Foot-rot.—This lameness arises from the sheep's feet being exposed to wet, and frequently feeding in long grass, which retains the moisture. The wet causes the outer part of the hoof to expand, and when the foot is dry, sand or small gravel having got into the nicks or crevices, the part becomes hot and very painful, and matter or pus, by shepherds called the *rot*, is formed. When the foot is pared, it will at times be difficult to find the sand or gravel; for the foot becomes so very hot and hard, that the wet has not the effect of letting it out: it will, therefore, keep rising upwards, and, if not discharged, will break out at the top of the hoof. This disease is generally found the most violent on hot

soils, such as sand or gravel, for the reason given: limestone land it seldom happens.

While I lived at Slane, I had about fifteen hundred sheep, and, in the course of fourteen days, at least one hundred were affected with this sort of lameness: it being in the month of October, I was much alarmed, knowing if not cured, it will render them poor against the winter. I had a shepherd from England, a very expert hand at paring the feet; and our remedy at that time was, blue-stone vitriol finely pounded; after applying which, we used to keep the sheep shut up in some dry place that the vitriol might have the proper effect. It happened, the shepherd had shut up about twelve of the diseased sheep—(as we made it a rule *never to get up* at any one time, more than were lame, for, which is very extraordinary, although the first cause is as above the disease becomes epidemical, and therefore a very necessary caution is, not on any account to put sound and lame sheep together in a fold);—the butcher came to kill a sheep, and there being a house adjoining with much lime in it, he put the diseased sheep among the lime where they stood for three or four hours; and, behold the consequence was, they were all, to a sheep, quick and sound. This struck me as being a speedy, safe, and cheap remedy. I immediately had all the lame sheep carefully collected from every pasture, their feet pared and washed clean with chamberlie, and put them in this lime-house: the result was, every sheep on the farm was cured in the course of one week. Since that time I have tried others, with equal success; indeed the efficacy of the remedy is proved by instances I have known, when sheep were very much tormented with the foot-rot on sand and gravel, of the owner's taking them to lime-stone land, which has effected a cure with any other application.

As a proof that the foot-rot is contagious, I will relate a circumstance that happened in my flock, when I lived at Doncaster.—I had hired a ram from a ram breeder, and when he came to me I found he had the foot-rot, in one foot, very bad: I had always known it supposed by shepherds to be infectious, and this circumstance proved the fact: this was in the month of September. It is a sort of hobby-horse with me to try experiments; I therefore ventured to put him to the ewes: the result was, they took the infection, nor could I free them from it in the whole of the time I kept them, which was thirteen months after, although I attended them myself closely during the progress of our attempt to cure. I thought at that time I would not accept of a ram as a gift, for the purpose of putting to ewes, were he troubled with the foot-rot: it has always been the opinion of shepherds that it is more difficult of cure than even the scab; and so I have thought, before I accidentally discovered the efficacy of lime, which has proved a safe, speedy, cheap, and simple cure.—For this receipt I had the honour to receive a silver medal from the Society of Arts in the Adelphi: at the same time a Mr. Whitworth received a gold medal from the society for a method of manufacturing ropes and bags with long coarse wool; when this gentleman observed, I ought to have another medal for the cure of the green-skit in sheep.—I happened to be at his house, when he was losing three or four sheep daily of that disorder; I informed him of the remedy hereafter prescribed, which immediately put a stop to the distemper, and he had no further loss.

Foot-halt.—This is also a lameness, but proceeding from a very different cause. It arises from a swelling between the claws, and is occasioned by a pipe or tube that nature has formed between them becoming overfilled with a sort of wax and hair. The cure for this

lameness is—Having a small hook, put it into a ho be found on the fore side of the feet; let the hook t hold of the skin in the inside of the hole, and dra out as far as the skin will permit, then with a sm knife cut the skin round, and draw out the bag or pi that contains the substance: this operation will eff the cure:—it is proper to rub a little tar and sa spirits of turpentine, on the part.

There is another very pernicious lameness in sh which I have once experienced; it proceeds from a h running humour affecting the sheep in the lower part the legs or fetlock, somewhat in appearance like w scratches in a horse. The only instance of it that ha fallen under my notice was when I acted as *shepherd* t my father; we had sixty shearing ewes affected in on pasture, and a little time after shearing one or tw were attacked with this lameness. I applied tar and ve digrease to the part, without success; and the disea kept increasing until there was scarcely a sheep free fro it. The flies, being at that time very strong and bu struck them; and, by lying on the feet, the maggots g in their wool: this irritated the disorder, and the di charge became intolerably offensive. At a loss how act, and fearing they would all be spoiled, I thought a change of pasture, which effected a cure without fu ther trouble: and I have since found, in some other ca when sheep were doing improperly, that this proceedi has been attended with the most favourable result.

Green-skit.—This disorder is generally occasioned a change of food, from poor keep to that of a rich ju nature; and frequently when sheep have been poo kept during winter, and there is a flush of grass in following summer, with much wet, they will be apt have this disorder, very much to their detriment. W I had the honour to ride over his majesty's farms

Windsor, the gardener on my return asked me what I thought of the management of their sheep; I told him it appeared they had been very much starved in the winter—that being the month of August: on which he enquired, with much surprise, how I knew, at the same time acknowledging it had been the case. It will equally happen to sheep taken from poor summer keep and put to rich food for the winter, as in the instance of Mr. Whitworth's, whose farm being poor land, his lamb hogs had been badly supported during the summer; I was on his farm in November, when he had put them to turnips, and almost every one of them had the green-skit—what shepherds call *shooting*. I had never seen any flock so generally affected; though I had cured many an odd one, both in my father's flock and in my own. My method of cure is this:—Take a green willow twig, one of the last shoots, and having twisted it, put it round the neck of the sheep, and it will immediately stop the skit: simple as this may appear, it is an effectual remedy, as the gentleman above mentioned can testify.

White-skit.—The white-skit commonly happens at the time lambs take to eating grass, at the change in their stomach from the curd; but colds will sometimes cause it. To cure this disorder, take a tablespoonful of runnet, by some called yearning, put it into half a pint of milk—the ewe's is the best, although cow's milk will do;—it must be immediately taken from the ewe or cow, and the runnet not put in the milk until the moment it is given, which should be done as quickly as possible, as the cure arises from the runnet and milk getting into the stomach of the lamb before it turns to whey and curd, for if turned it would be of no service; but by being introduced to the stomach in the unchanged state, it intermixes with the food, and produces a regular and healthy digestion. And, notwithstanding the extraordinary cure of the

green-skit by the willow, I heard a gentleman, stander at the time Mr. Whitworth mentioned t cumstance at the Adelphi, say, that peeled used in the same manner, would cure the skit:—a remedy so simple and easy may be wo trial.

Giddy, or *turn*.—This disorder proceeds from or vesicle in the brain-pan: it is a watery matter, between the scull and the brain, and seems to much heat, for when it remains long the scull b very thin; and it occasions certain death to the which generally suffers much before its destructio the length of time. The first symptoms of this are, the sheep will neglect to follow and keep flock, their sight appearing dim or dizzy; they sta noise, and keep turning round while eating the as if intoxicated. It does not seem that this d arises from any particular sort of food; nor is it gious, or hereditary, as I have cured a great nu sheep, some of which have afterwards bred many lam I never knew an instance of the offspring being so a nor did I ever know of a relapse. Numerous a have been made by operators to trepan, and take bleb; but many more sheep have died than ha cured. My father's remedy was, to cut off the rather by way of bleeding, than with any other int and a sheep now and then, perhaps about one in has been thus cured: but, as my father's she mostly in a state of good mutton, after trying t a few days, if appearances were still unfavoura killed them. It happened one day, when I was father's shepherd—I had then given up the office herd, and was made lieutenant-inspector of the concerns of the farm—in walking past twenty hogs, half-years-olds (sheep at that age, or unc

year old, are more frequently attacked with this disease than at any other period), I observed one, though not entirely leaving the flock, to have the appearance of being affected with the disorder. I ordered the shepherd to take it, and I would cut off its ears. The shepherd was an extraordinarily good runner, but this hog gave him a severe chase, and he was some time in catching it, which put him in a passion, and happening to take it by the ears, he twirled it round several times before I got to him. I then cut off its ears, as near to the head as I could with safety, it being our usual practice to cut them off pretty close; but, by swinging it round, the shepherd had probably pulled the ears out of the socket, for the result was, in about two days this sheep had rejoined the flock. Since that occurrence, I have made a rule constantly to pull the ears very hard for some time before I cut them off; and this proceeding has seldom failed to effect a cure. But one thing must be particularly regarded, to ensure the efficacy of this very simple remedy, namely, that the operation take place at the first appearance of the disorder; for when the animal has been some time affected, I apprehend it may not have the desired effect.

Scab.—This is a cutaneous disease, which seems sometimes to appear spontaneously, as I have known sheep affected with it that have always been kept by themselves. My father never had the scab in his breeding flock during the time he was a breeder, which was more than thirty years; but I once knew a pet ewe in the home-yard, that had never been amongst other sheep, to have the disease; it is therefore certain, that a flock of sheep may be affected without either neglect or bad shepherding. It is generally allowed that much fatigue, by dogging, harrassing, &c. will cause this disease; which is so catching, that a scabbed sheep's rubbing against

posts, gates, rails, or fences, will leave or com
infection to a clean sheep rubbing against th
place, although it be several hours after. T
means of cure, with the least injury to the wool,
curial ointment; the method of application as
viz.—Make a furrow in the wool from the crow
head to the end of the tail, and put on the o
from the nose end to the tail end; then anothe
under the belly, and apply the ointment from u
lip to the fundament and under part of the ta
that you are sure a small portion has reached th
every part; that done, make a furrow from the e
the side direct to the thigh, one low down on t
and another on the fore shank, applying *the* o
quite down to the hoof: in short, the furrows
not to be more than four inches asunder. This t
application is for sheep that are what is termed *blet*
there is a sort of dry scab, which sometimes
gently opening with a knife, for the medicine t
proper effect: the skin ought not to be so cut as
blood, as that may even prevent the ointment fi
rating, or, if it do, cause so strong a salivation
danger the life of the animal: the incisions s
from three to four inches asunder, on the scab
somewhat like the scoring of pork to roast.
strongly recommend using the ointment to t
flock, when some of the number that pasture
break out; and at all times anoint every shee
even a single bletch upon it, as directed, fro
tail, for the disease is assuredly in his blood,
parts then affected, though not visible to the ey
few days, if wet weather, become a thick scab.
ment requires only a light application; but car
taken to get it to the skin, and that it is well rub
much depends on the dressing being properly

I knew an instance of a friend of mine encountering a great loss, from suffering men unacquainted with the method to apply the dressing on sheep; by using too large quantities, it being the time of shearing in hot weather, the ointment caused so strong a salivation as to kill about half the sucking lambs. The expense of the dressing for each sheep is from 2*d.* to 3½*d.* according to the size, the price of the articles, and season of the year, as in hot weather the ointment requires less strength, and should be then, particularly, lightly applied. This dressing is very serviceable to sheep about the month of October, to kill the fags, lice, &c. as the grease remains in the wool, and not only kills the visible vermin, but also destroys the eggs and all invisible reptiles that infest sheep, causing a sort of brightness in the wool; it is likewise a great preservative to the wool, and the health of the sheep.

Mercurial Ointment—how to make it.

For the summer's application, add 1 ounce of quicksilver to 1 lb of hog's-lard: for use in winter, put 2 ounces of the quicksilver to 1 lb of hog's-lard. To kill, or prepare, the quicksilver, take a small quantity of horse-turpentine, put it to the quicksilver in a mortar, and with a pestle work them well together: some persons add a very small proportion of sublimate of mercury. This operation requires much attention, that the ingredients are thoroughly incorporated. Then add to them the hog's-lard, and be very circumspect in mixing them; for should there be any neglect in this last operation, much injury might be done to the wool, by causing it to come off, and at the same time endanger the sheep. When sheep are much infected with the scab, it will require 1 lb to four sheep; in which case the dressing will cost more than stated above, as the summer ointment is now 16*d.* per pound, and the winter 2*s.* 6*d.*

Tobacco-water.

This application was for many years the onl
for the foregoing disease, and is still used by some
I have applied both the ointment and this wa
give a decided preference to the former. The
is a preserver of the wool, the tobacco-water a c
the latter is of a harsh, drying nature, the oth
liorater. In making tobacco-water, put about
of water to 1 lb of tobacco; when it has stoo
days, squeeze the tobacco from the water, p
liquid into a bottle, and cork it up close. If
tional quart of water be then put to the tobacc
the pound of tobacco will have made about five q
the mixture; but the quantity greatly depends
strength of the tobacco, the season of the year,
virulent kind of scab, as it would appear there
kinds of the disease, the one which the shephe
the *dry scab* being much the hardest to cure.

Blindness.—This disease is caused by colds, an
different from all blindness in other animals wi
I am acquainted; for, without any application,
not more in general than from ten to fourteen d
sheep recover their sight again. There is not the
of the sheep not recovering their sight, but, if
water in the pasture, great danger of their being c
therefore, it is advisable to put them in so
where there is no water. This disorder happ
frequently after washing or shearing, and at t
end of the year: whenever it takes place, it c
sheep to shrink greatly, and to lose their fle
some shepherds are of opinion that it is co
which I doubt, as I have known a single sheep
fected in a pasture where there were many, an

also known it nearly go through a flock: however, it is a safe way, when a sheep is blind, to put him by himself in some place where there is no water, as there either is, or ought to be, water in every pasture; for sheep infected with this disease may be said to be stone-blind, as they will run against any obstacle before them. I have frequently applied as a remedy, honey and distilled verdigris, made up into an ointment, the ingredients being well worked together: to apply it, I made use of a feather—the fine part, as it cannot be too soft—dipped into the ointment, opening the eye-lids with one hand, while with the other I draw it through them, leaving the mixture behind: this, I have reason to believe, causes the sheep to receive his sight sooner than he otherwise would. I have sometimes put a little verdigris in a goose's quill, and blown it into the eye. My father's remedy was, a fine white powder, called mareshele, to be bought at the druggist's, which he blew into the eye, by the same means I have mentioned for the verdigris.

Rot in Sheep.—Necessary Precautions in the Treatment of Sheep to prevent this fatal Disease, and the Cause of it clearly pointed out.

Various opinions have been advanced concerning the cause of the rot in sheep, which appears to me extraordinary, as it is evidently occasioned by the flowks preying upon the sheep's liver, and consuming such a quantity of the blood, or otherwise destroying its circulation, by perforating the liver, as to cause the death of the animal. This is clearly proved by the whiteness of the flesh and skin; no part, not even the fat, having the appearance of blood left in it. The attack is first discoverable by the eye of the sheep, the veins being empty; the blood then becomes reduced to a weak, poor state,

what is termed sizey, and, by the animal's hol
head down, the watery particles descend between
and flesh below the under jaws, forming a matter c
chocker, which has caused the disease to take t
of *rot*; this seems to me strange, as it is not *p*
kind of water. Some of the faculty have end
to prove that it arises from colds; which is an
traordinary opinion, as the lights are not affec
has the animal any kind of cough, or any aversi
food, until worn down for want of blood. Fro
tack till the time of the sheep's death is commo
three to six months; but some sheep in mo
flocks live to, what is termed among shepherds,
again,' thrive, and get fat, although flowks
found in the liver, through which they have form
sages; these are skinned over, seeming to have
after the flowks had made their way, and the s
not appear to experience any material detrime
their presence in the liver. In these passages is
kind of yellow matter, which is probably the e
or ordure, or it may arise from a sort of wa
make. It seems very extraordinary, if thes
live on the sheep's blood, that they do not always
equally to affect the health of the animal, which
not to be the fact.

It is remarkable, when the affected sheep
and the liver taken out, the flowks are eviden
though they die almost instantaneously when ex
the air: but, whatever they originate from, the
return to the same. The bots that infest th
stomach are voided with his excrement, an
less turn to flies, from which they are known t
sived.

Some persons have contended that this dis
ceeds from a natural decay of constitution; but

very strong proofs against that opinion, instanced in human bodies, and the loss of constitution in other animals, particularly in that arising from the unhealthy situations and food of the cows in London, which are not all attacked at one time, nor is there any living reptile found in them. Again, as the attack usually takes place about the time of shearing, other persons believe it is occasioned by cold they receive from the loss of their coats; but this cannot be true, as the lambs, which are not shorn, are equally affected with the rot.

To settle this point, I will endeavour to satisfy the reader with what I am myself perfectly convinced, namely, that the cause of the sheep's death is the flowks, by their preying upon the liver to such a degree as to kill the animal. This seems to me not more difficult to believe than that maggots on the outside would destroy the sheep if it were not for the shepherd's care. I shall bring proof that the sheep take these animalcules in with their food; that the mischief is done in a very little time; that either a very small quantity occasions the injury, or the spot of ground must abound with them; that fat sheep are equally as liable to be affected as poor; (but, speaking generally, deep pastures are not so likely to produce the disease as short pastures, and it is very rarely known to happen on any but wet, spongy, foggy land, such as cannot properly be drained); that there would be no rotten sheep found even upon the most spongy land in the country, if it were properly drained; that all such land as can be drained is to be rendered fit for sheep in a general way, and when not so, it arises from mere neglect—either want of money, industry, or good management; and that there being rotten sheep on inclosed lands is inexcusable. The latter remark will not apply to commons, which are a great nuisance: for open commons have been the ruin of many

an industrious man, and the destruction of many fa
of sheep.

I will first instance how speedily this disorder is co
municated, its effects on the sheep, and the progres
makes.—It generally prevails the most during wet se
sons, and on damp pastures; though there are some si
which appear not so moist that will produce it; but I a
thoroughly convinced that swamps or wet holes are
found in such land. The first farm I lived on was
Claythorpe, in the county of Lincoln; it was what
termed middle-marsh—the soils various, some sand, som
gravel, some clay—and much of it of a rich nature fo
breeding or store stock; almost all seemingly dry land,
but every pasture had one or two acres of *low swamp*,
not liable to be flooded, yet when much rain fell inclined
to be wet, although pretty well drained by open drains.
The occupier before me kept but about 260 old sheep on
the farm, which, the summer eaten land being 130 acres,
was about two sheep an acre, besides perhaps about
180 lambs; in all, about 440 sheep, or little more than
three an acre. The method pursued at that distant
period was, to keep few sheep, and more cattle, with
some horses, to prevent the rot, as draining at that time
was not so well known, or practised; probably on ac
count of the expense. On the same farm, when drained
by open drains, I kept 380 old sheep, and 260 lambs
the number of acres they pastured upon being 100
which was nearly four old sheep, and about two lambs
and a half, an acre; in all, rather more than six sheep a
acre, old and young. But the old farmer kept many mo
cattle than I did. Now, I never knew a sheep kill
from this farm, or even in the parish, without flowks i
the liver.

I have drawn out those two different managements
shew the reader what were the ideas of the farmers in

times respecting rotten lands: the rents being low, they could pay them, and afford to lose much grass, without being at the expense of draining. And, notwithstanding the draining, mowing thistles, and keeping the land in such a state that every sprig of grass might become useful—for in the old way there were several acres overrun with thistles and refuse stuff, as I do not suppose he mowed a thistle during the time he occupied the farm—in my improved method, paid well for money expended, yet the old farmer's plan was probably safer, as he kept more cattle and horses, though not so profitable a stock as sheep; for if what is called a *jack rot*, or general rot, which has been known, had happened, I should perhaps have lost my all, while, if his sheep had been rotten, he would have only lost a part of his property; therefore, I think it very judicious, on lands subject to rot, to keep more cattle and fewer sheep, letting the grass grow longer on such soils than on sound land. Short pastures are on most lands more fattening for sheep, and even cattle *(and horses may be seen generally to feed on the short grass)*; and it seems plain to me, that the reptile, or whatever it may be that produces the animalcules, deposits its ova or young in places the most unlikely to be eaten by the sheep; consequently, when land is hard stocked there is much greater danger; hence it is much more general on bare commons than on pasture land. However, I lived four years on the farm without suffering any considerable loss; but I think I ran some risk.

There have been many convincing proofs of sheep contracting the rot in one night, or even in an hour, and, in one or two instances, even in a still less time. The following is a well-known fact.—A farmer in the neighbourhood of Wragby, in the county of Lincoln, took twenty shearing wethers to the fair, leaving six behind in the pasture where they had been summered. The score

sent to the fair not being sold, were driv
put into the same field where the six had b
the course of the winter every one of the t
the rot, but the six that had been left bel
and did well. There could be no mistake w
this fact, as the sheep sent to the fair h
mark from that on the six.

Another similar instance corroborates t
nion.—A sheep belonging to a flock of
lamed by a broken leg in getting out of E
the same county, the nineteen were suffere
a common at the end of the town, until a
procured to carry the maimed sheep home
all died rotten, while the sheep with the l
tinued perfectly free from the disease.

I will relate another circumstance of t
more extraordinary.—A sheep breeder
in Dorset, while on my excursion in that c
me a small hollow place, about half an
where was a sort of basin to hold water;
shepherd took the flock, about 800, and l
the whole of the time they were there bein
minutes, and upwards of 200 became ro
quence.——I could mention several similar
these are sufficient to shew how careful sh
to be in suffering sheep to graze on suspi
and that the animalcules must be, at least
great abundance on the spots where they

It may be interesting, and necessary,
reader how I became acquainted with the
flowks, and their progress.—I had ten ewe
George Culley from Northumberland: a f
I received them, he wrote to me that he w
had taken the rot; this caused me to be
spect in examining them. I got them up,

their eyes, which give the first outward indication; for if the veins be empty, and scarcely any blood seen on lifting up the top lid, it is a certain sign that the sheep is affected; but I could not discern any defect in the eye: nevertheless, I fully thought they were rotten, Mr. Culley being so good a judge of sheep, and so correct a man; but, the number being small, I thought I would carry them through, and try some experiments upon them. Being used to shepherding, and knowing that all disorders in sheep are the most discernible when they rise in a morning, I got up early, and made it a practice to shepherd these ewes the first thing. A few days after I received the letter, I perceived one ewe in particular begin to cringe, and bend in her back, as if something hurt her; and these twitchings seemed to increase: I therefore determined to kill her, to see if I could discover any thing in the liver. Knowing that part of a sheep's liver, if affected, will dissolve in boiling, I thought I would try that; but when she was killed, and the liver taken out, it appeared to be perfectly sound. The liver being laid on a bench, against a large window, I was standing at a small distance, when I thought I could perceive a slight motion in one part of the liver, under a sort of very fine, thin skin, or film; on touching it, and breaking the skin, I found the part I had seen to move, or wave, covered a hole, large enough to hold a moderate sized walnut, and containing a bloody matter, in which I fancied I could perceive motion, as though there were some living animalcules, or reptiles, in it, which proved to be the fact; for having got a magnifying glass, I could with it plainly see some of them, so as to discern they had life: being before very well experienced respecting flowks in the livers of sheep, I was thus thoroughly convinced that the ewes were all rotten. I then resolved to kill another in a fortnight, to see what progress the

flowks had made; I did so, when they were perf formed, their shape being visible: in about a fort afterwards I killed a third, and found the flowks ha regularly increasing. Remembering to have heard it ed by different shepherds that spirits of turpentine cure sheep that had taken the rot, I determined the experiment on the remaining seven; I accord gave each surviving ewe two tablespoonsful of the during the winter one died; two more were very chockered, and extremely weak; two were only a chockered; and the other two of them, to all appear ailed nothing. All the six ewes brought up their very well, and were sold for breed at two guineas a half each. Having their lambs taken from them July, four of them by the month of October beca very fat, and the two that had been weak and chock in the winter made themselves saleable mutton; when killed, they all had flowks in the liver, the that were so badly chockered having by far the gr number. From this experiment, although six out o seven lived, brought up their lambs, &c. I am n the least encouraged to think the turpentine was of service, or the means of preserving the life of the as the flowks were alive at the time the ewes killed: had the flowks been dead, or none fou should have had some faith in the medicine. The tion, therefore, is—Can any remedy be devised tha kill the flowks, without injuring the health of the s as it is very evident that the flowks occasion the struction.

The flowks prey so much on the substance o liver, and introduce themselves so deeply int numerous blood-vessels of it, as to change the col the blood, and reduce almost the whole of it to watery serum; thereby depriving the animal of the

cipal support of life, and destroying that source of nourishment so absolutely necessary to be distributed pure through the whole system. Blood, in its purest state, is supposed to contain five parts in six of water; and when those ravenous flowks have fed for a length of time on the most solid part, by the sheep holding down their heads to feed, as I have before observed, the watery serum settles underneath the chaps, and forms the chocker. When the flowks have existed some time, they form cells in the veins, around which the parts will be hard and callous, somewhat like the wind-pipe, and the whole of the liver become a concretion of knots and lumps. A sheep that is fat is equally as liable to the rot as a poor sheep, and at the time of his death he will not have lost much of his fat; but the flesh and fat of a sheep so affected will weigh less according to the bulk than those of a sound sheep.

This disease seems to me incurable; but prevention is easy, and *prevention is better than a cure.* On this subject I speak from experience. The very farm on which I was born, at Aby Grange, was deemed so rotten, that the oldest inhabitants advised my father, when he took it, not to keep sheep, but to breed horses and cattle. The greatest portion was a poor, sour, hungry clay, so tenacious as to hold water in most parts like lead; but when drained properly, with open drains, I question if there was a sounder farm in the kingdom. I acted as shepherd four years; as we killed our own mutton, I officiated as butcher during that time, and also for four years after, but do not remember seeing a single flowk in any one liver: even during the year when nearly all the sheep in the neighbourhood were rotten, my father lost but seven out of about four hundred, on that farm. Therefore, it appears certain, that were lands properly drained, they would seldom produce the rot in sheep; for though

water of itself will not occasion the disease, ye
moist situations, is best that will. Co
and the increase is less than ever known
ever known a fat sheep with the
known wet weather at time of the
ing taken from the
but water at all times of wet. F
reason to infer, that it may be a
When I was in America, I heard the
generally spoken of than it is in England,
complaining that their land was
checked that disease. I was in consequence
examine the liver, which I did in
country—at New York, Philadelphia, Rich
andria, Annapolis, and in the city of
never could discover a single flook; and
persuaded there is no such thing as a
that part of the world. What appears to be
like the rot, arises from a very different cause
the summer, their sheep, if not plentifully supp
sel, are so oppressed by the heat, that in the
breath, they take up much dust from the ground
in dry weather, all dust, like a turnpike-road
which, their food being covered with it, mixes
and in a hot day, they lie snuffing, until their
almost stopped; and the mucus and dirt together
substance that looks like pus, which the A
suppose to be the rot.

I have been led more particularly to mention
circumstance, from seeing an author on the su
rotten sheep quote an instance in France, to pr
folding sheep is the cause of the rot; while,
contrary, if any good can arise from that pra
may be a preventive. There is a farm in Dor
which has been noted for a continuance of the

almost every year; but the present occupier, by a pretended secret, has for many years preserved a sound flock; though the whole secret appears plainly to be, merely preventing the sheep from grazing on unhealthy spots. This may readily be conceived, since a very small portion of land would rot all the sheep on a farm, as proved by the instance recorded a few pages back, of two hundred sheep out of eight hundred taking the rot in the course of fifteen minutes. Another consideration to which this farmer seems to allude, is, not letting sheep out of the fold until the dew is off the ground—an observance of which rule many other shepherds in that county appear to think keeps their flocks more healthy; but I much doubt its ever preventing the rot: and no criterion can be drawn from the county of Dorset, which is particularly dry and healthy for sheep in many parts during the season they are subject to the rot; though keeping sheep in the fold till the dew is evaporated may be a preventive to the resp, as that disease unquestionably arises from permitting hungry sheep to feed plentifully on juicy food. The rot is certainly produced on wet land, and most frequently where water stands in podges, or puddles; hence some shepherds are of opinion that the disease arises from the sheep taking in dirt with their food, particularly as it frequently happens on land subject to be flooded: but that is no certain cause; for when I lived at Doncaster every inch of my sheep pastures was liable to be flooded, and has been so repeatedly during the summer, about the time that sheep take the rot, and there were other lands in the same state stocked with sheep, but I never knew a sheep have the disease on that land, although every blade of grass would be soiled until a sharp shower of rain fell. Another strong proof that dirt will not occasion the rot, is, there never was known an instance of

sheep contracting the disorder on turnips; for, i
had that effect, all the turnip sheep in the k
would be rotten. And the sheep feeding on turn
rapes, decidedly proves that juicy food merely ca
produce the disease; although it is the opinion o
shepherds and authors that it is contracted by
cold and wet grass;—some allude to particular
I have known many farmers, in counties w
rot is frequent, object to white clover, calling it
grass: but this opinion is extremely vague; fo
white clover grows in all parts of this kingdom, it w
render all lands alike. There may be one acre of land
ten thousand that will rot sheep, and no more, and ye
sufficient to affect all the sheep that *may graze on* the
ten thousand acres.

To return to the author above quoted.—That the prac
tice of folding sheep is unhealthy, from their being
penned up in a close manner, and consequently render
ing the air foul, there is no doubt; but that would no
create a living animal, which is certainly the cause o
the rot. In all probability it is some other disease in
France that occasions the destruction of their sheep,
which the remedy made use of, namely, an apparatus to
purify the air, seems to prove. It is indeed clear, from
the means adopted as a preventive, that the disorder
must be very different from the rot of sheep in England;
as it is well known there are many thousands of sheep
contract the rot that are never folded, and, on the other
hand, many thousands of folded sheep which are never
known to have the disease. But circumstances and
situations alter cases: for instance, if the sheep in
America were folded until eight o'clock in the morning
as close together as the sheep are in England, half of
them would be suffocated: therefore the English shep
herd can draw no inference from the measures made

use of by foreign shepherds, nor can the foreign shepherd from those adopted by English shepherds. I doubt if the scab on sheep ever appear in America, as I never saw it; nor do the maggot flies strike the sheep in that country, though they be ever so dirty and foul behind, notwithstanding those flies are more numerous there than in England, and infest butcher's meat, cheese, &c. in the same manner.

In America, salt is given to the sheep, not with any idea of preventing the rot, but to promote their general health; however, as no flowks are found in the livers of sheep in that country, and as the salt marshes, though ever so wet, never occasion the rot, I would suggest whether it might not be worth while, in a dangerous season, to try an experiment with one part of the flock, distinguished by a different mark, by giving them salt once a week, about two tablespoonsful to each sheep, which could be done at an easy expense: should it have a good effect, it would be a most valuable discovery; not that I entertain much hope of success, for I think of the cause of the rot in sheep as I do of all other things, that our wise Creator sent those flowks with a good intention —to oblige the farmer to drain his land; for the draining of rotten land has, like all other wet land drained, another profit attached to it, namely, that of rendering plants growing on it much more fattening than those which grow in water, or even on wet land.

Sheep never contract the rot during frosty weather, or soon after a sharp frost has happened; nor, indeed, is it known to make any attack on sheep until June; which renders it probable that the eggs, seed, or whatever give rise to the animalcules, are left among the grass, or produced, after the hot or summer months set in, similar to the maggot-fly, the butterfly, moths, &c. which are stopped in their progress by frosty weather.

On clayey soils, that retain wet a considerable rain falls, sheep are very apt to rot; the anim whatever breed the flowks, probably being ge the little stagnant pools of water, or more i on the grass about such places. I suppose t swallowed in embryo, and carried by the blo liver, where they stop, and find nourish guard against the rot, it is advisable to le plenty of good grass in such pastures; no horses in them, but few cattle, and those light kind.

Meagrims.—This disorder has been suppose ceed from breeding repeatedly from the sa sheep, or what is called breeding in-*and-in*; withstanding Mr. Bakewell endeavoured to d crossing, I am decidedly of opinion that his n breeding has proved itself a bad practice;- fully treated on in this work. When a sheep i by this disease, the first symptoms are, co tail like a well-nicked horse, and running canter, like a lady's pad; and if you clap upon his back, he will immediately sink do seems to indicate that the disorder is seated i After sheep have been once infected, it is da persist in breeding from such stock, as great been sustained by so doing. I would, theref the breeder, as soon as he perceives the dist ground, by all means to change the breed, as ever, to my knowledge, been hitherto disc have known a single sheep in a flock affecte more; but it has oftener happened that several disorded at the same time.

Rickets.—This disease is so like the former t scarcely distinguish the difference; it is also the meagrims in being incurable, and is apt to g

the flock; therefore a change is the only safe remedy.—Both the two preceding disorders are hereditary.

Rubbers.—In this disorder, which differs much from the above, the sheep will place himself near a post, tree, or any thing proper for the purpose, and continue rubbing almost incessantly until he is totally exhausted: he loses all his wool, or at least spoils it; and his desire for rubbing is so great, that he neglects pasturing with the flock, being seldom seen eating, though a long time elapses before his death: the knife, therefore, in this disorder, as well as the above, is the best cure. But this has not been so destructive as the two foregoing disorders; and as it must be a sort of scurvy, I should try physic, such as salt and chamberlie, as the cause must originate in the stomach.

Black-leg.—The first symptom of this disorder is a lameness in a hind leg, appearing as if broken; the attack is made on or near the stiffle joint: it is a mortification, which increases so rapidly, that the sheep seldom survives twenty-four hours. No cure has yet been discovered; and the knife seems to be the only remedy.

I once knew eight sheep out of thirty affected in this way. Thinking it might be occasioned by the bite of some venomous reptile, I have without effect applied sallad oil, as that will cure the bite of a snake, or almost any other noxious animal. I have also tried fomentation, supposing it might arise from a bruise; but I am now thoroughly convinced I was mistaken, by an experiment tried in Ireland upon some calves. However, as sheep in different disorders have received benefit from a change of pasture, I would recommend a trial of that proceeding; giving each sheep, at the same time, a dose of physic, as the disease certainly proceeds from foulness in the blood, which arises from a bad habit of body.

Cattle are also subject to a similar complain as prevention, with regard to them, seems e would refer to the section on "*Disorders in* (page 241.

Maukes, in sheep.—To destroy these vermin, ta ounces of sublimated mercury, pounded very fi pint of spirits of turpentine, and a gallon of water: mix the whole together, and shake it w time of using. It is a good way to wash the woo clean water, after the maukes are taken out: a they have penetrated the skin, rub on a little tar w with grease, to prevent the mercury from doing it After the wool is washed, apply some more of the li or the flies will strike the part again.

Galling, or *Fly-beating*.—The part affected shoul covered with a piece of linen cloth: if on the hea cap is the best; on any other part, it is sometimes per to fasten the cloth by applying melted pitch; where there is wool sufficient, it is better to sew cloth to the wool, as the pitch is apt to heat the and to break off: in all cases, hopple the sheep's legs, or he will be sure to scratch the part with his For this purpose, the tops of woollen stockings ar best suited: having two strips of stocking, abo inch and a half wide, hank them together, give th twist, and put them on the legs, then tie a piece of round to prevent their slipping. This will not h the animal thriving.

Worms in sheep's heads.—A large disagreeable lo worm is often found in the heads of sheep, and s times in the horn of a horned sheep; rare inst have occurred of eight or nine of these reptiles discovered in a single head: when taken out, they crawl quickly along the ground. This worm is sup to enter at the nose, as it has been found in the no but, what is very extraordinary, the health of the

does not appear to be affected by it. It is frequently met with by the dealers in sheeps' heads and plucks; and therefore, if not peculiar to fat sheep, they are certainly, at least, equally liable to be infested with it. No prevention or means of destroying it is known.

Yeaning.—The proper Method of treating Ewes at that time, and taking the Lambs from them in cases when they come wrong.—I have suffered greatly by loss of ewes at the time of yeaning; which has been frequently occasioned by making use of rams with large heads, when the fashion for very large sheep prevailed in the county of Lincoln. Since the new Leicester have become so general, ewes have yeaned with much less difficulty, indeed the lambs are often not larger than a half-grown kitten: but there is no necessity for that extreme; for if the ram have a long thin face, and his ears stand near together, so that the crown be small and narrow, as it is generally that part which stops, the ewes will yean with ease, even with the offspring of a large-carcased ram. Another thing in which I have much erred was, in being unacquainted with the opinion of breeders, that ewes which are fat, or in high condition, do not yean with such ease as poor ewes: which I have since found to be right. After ewes had been at turnips, I have taken them to some poor keep, as grass of a dry nature, which, changing the state of their body, rendered their dung hard, and that occasioned an alteration in the blood; many ewes in consequence have fallen ill, and for want of help have died in yeaning. I did not then know the cause; it was called bad luck: but since that time I have well considered the matter—many misfortunes of the kind happening in the London cow-houses, in calving, the circumstance being precisely the same—and I am persuaded, that were ewes which at the time of yeaning

come hardly by their lambs, and lose blood, or ra
sort of red water, to have about two tablespoon
salt and half a pint of chamberlie given them ev
twice a week, as the weather might happen to be
very dry weather they would probably require
spoonsful of salt, which the state of their dung
shew), many both ewes and lambs would be
and have better health afterwards. It is a com
observation with a friend of mine, a cow-keeper,
if his cows' dung be stiff and hard, there is sure
an outcry among the dealers of a want of milk. Th
fore keeping the dung in a proper state leads to
beneficial results, and is well worth the bree
attention.

At the crisis when the ewes are ready to yean
lambs, great caution is necessary to be used by
herds, not to be over-forward in giving assistance,
rather to leave Nature to herself: as much danger
arise from impatience, or hastiness of temper. D
the time I was my father's shepherd, I have know
ewe be twenty-four hours in a restless state, seem
in the act of yeaning by very slow pains; she has
theless lambed without help at last, has brought
her lamb alive, and done well. But there is gre
ference in ewes at this time; some having their
much quicker than others; for there are some ew
pain a little, and then eat a little. If an ewe pai
hard, and she force her water-bleb out quickly
seem almost exhausted, it is necessary the sh
should examine the state of the lamb, by feeling w
it comes right: should it present with the feet, a
head turned back, it is impossible she can y
while she is injuring herself and endangering t
of the lamb. In that case, the best method is,
the lamb and take it away backwards; for wh

head is bent back, it is extremely difficult to get it through the bones, as there is no taking hold of it, and by drawing the fore feet the head is almost sure to give back. I have sometimes, when the ewe seemed to be wide, and her pains regular and strong, put the feet back, and having righted the head, the ewe has brought forth the lamb in that regular form without any further assistance. It sometimes happens that one foot only, with the head, presents through the bones; in which case I always venture to take the lamb by that foot and the head, and it will generally draw away without danger. When it happens that the lamb comes backwards, shewing the tail and no feet, a man should hold the ewe by her hind legs with her belly upwards; this is necessary at all times when the ewe wants assistance, as it not only gives room for the man's hand, but prevents her pains from forcing the lamb upon the streight or narrow part; and the man may thus with more ease put the lamb in any position he judges proper. In this last case the lamb will almost always right itself; for by holding the ewe with her heels elevated, the lamb falls forwards, and its legs naturally stretch out. Instances sometimes occur, when an ewe has two lambs in her, that the feet of one lamb present with the head of the other; in which case strange work has been made by supposing all to be one lamb, the shepherd having pulled off the shoulders of the lamb, and distressed the ewe in a shocking manner: indeed I have known the ewe killed before the mistake was discovered. But this circumstance may readily be perceived by pulling the legs, when the shepherd will find a strong resistance; if he then get a man to hold the ewe with her head to the ground and her hinder parts elevated, the lambs will immediately separate, and the lamb whose feet presented will slip back. In all cases where lambs come wrong,

and require putting in a position to be delivered, I found it best to take them away backwards, as ther then but the two hind feet to direct; for when an a has been made to draw the lamb through the bon the head and fore feet, the head has been apt t back: and there is no difficulty in drawing the away backwards, as it is smaller behind than b There is one thing necessary to be observed:—w lamb presents the fore feet and the head, as it ou do, it is proper to draw towards the udder all the t but when a lamb is delivered backwards, it shou drawn in a direct line with the ewe's body, o chance is ten to one it kills the lamb, and partic when it comes to the breast. Whenever lambs sent wrong, assistance must be given: but many have happened in which impatience in the shep though often with the very best intention, has bee cause of a lamb's coming improperly; for instanc attempting to draw the feet before the nose of the is through the bones, the head will commonly fall and occasion the difficulty above described. Her Nature, if left to herself, will in general safely effe purpose, perhaps ninety-nine times out of a hund

If an ewe receive injury in lambing, spirits of pentine applied to the part (I have tried treacle, seed oil, and several other things) will be foun best, with good nursing, and beer caudles made treacle and oatmeal. I have lately had much s by boiling a red herring in water until all di and giving it to either cows or ewes after their de

END OF THE FIRST VOLUME.

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